I have been teaching chemistry and biochemistry for over 30 years now but its still an exciting endeavor for me to meet a new class. Although I had always been fascinated with science, it was an instructor in a biochemistry course that I took in college at SUNY- Albany that really turned me on to the field. My instructor, Dr. Aronson, made the subject come alive. In fact, I can still remember an exercise he had us carry out in class. You see he was a long distance runner and he had just finished running the Boston Marathon. To integrate this experience into the classroom he had his students calculate the number of ATP molecules that he had metabolized while completing the race. It was just one of many interesting scenarios he brought into the classroom at a time when the most stimulating item in a lecture hall was white chalk! He was one of the individuals who motivated me to pursue graduate work in biochemistry at UCLA.

But why teaching .....? Besides becoming more of an expert in the field that I was interested in, as a graduate student another of my responsibilities was to be a teaching assistant and run workshop sessions for the class that I was assigned. It was nerve racking at first, after all standing up and speaking in front of a group of people is not the easiest thing to do. But when you enjoy what you are talking about and have the chance to bring that knowledge to others it can be exhilarating also. So between my passion for learning and a desire to spark that passion in others I had found my life’s work.

But teaching isn’t only about me- it’s about us - and how we will approach learning together. I hopefully will be able to get you excited about biochemistry, even if you may not want to make it the foundation of your career as I have. But many of you already plan to enter careers in the biological or health sciences and realize the importance that biochemistry plays. It is true that biochemistry is all about using the
Teaching is an evolving profession. The tools available to an instructor, and thus a student, are much more varied and sophisticated today than they used to be. But in addition to the tools, the teaching process has also changed. The old model of the “sage on the stage” giving the “perfect” lecture doesn’t necessarily translate into “perfect learning” by students—although being a knowledgeable, effective communicator certainly is valuable. The teaching must engage students and I feel that part of my responsibility is to give you the skills you need to make yourself a better learner. This is a quality that you can carry with you through the rest of your life and apply to any learning experience. How do I try to do this? One is by getting you to focus on “active” as opposed to “passive” learning processes. Reading about a topic or watching me do a problem (passive) is not a good way to become an expert in it -- just like watching someone else ride a bike is not the most effective way to learn how to ride one yourself! I will provide you with a variety of ways in which to “actively” interact with the material. For example, when you ask me a question, and I invite questions anytime, I may say “what do you know that relates to the question you are asking or what do you think the answer is?” I don’t do this to put you on the spot; I do this to try to help lead you to the answer. I may also ask someone else in your study group to help you with the answer in that way engaging your fellow students in the learning process. True, active learning is more challenging and difficult, but it is much more effective! As for problem solving, there is no simple equation or formula for solving all problems, but I hope to expose you to some useful strategies to allow you to feel more comfortable in confronting problems.

So actively engage yourself with the material in this class: think about it, write about it, and discuss it with me and other students. I will help you to engage by having you do lots of problems in class and at home. Use me as your motivational guide to success, realizing it will be challenging, but rewarding.

Enjoy the journey and don’t give up!

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**OFFICE HOURS**

TTH 10:00-11:30, MW 11:00-11:45, W 4:30-5:15 (or by appointment)

**COURSE INFORMATION**

The course is designed to provide a thorough introduction to the principles, concepts and terminology of biochemistry, with an emphasis on the structure and function of biomolecules, the role of intermediary metabolism in energy production and common biochemical laboratory techniques. Topics include the chemistry and properties of three groups...
of biological macromolecules (proteins, carbohydrates and lipids) and their building blocks, protein structure and function, enzyme catalysis, and the details of the central metabolic pathways (glycolysis, glycogenolysis, the citric acid cycle, electron transport, and oxidative phosphorylation) including their regulation and integration. The laboratory exposes the students to a variety of biochemical techniques and how they are used to evaluate biomolecules and system.

PREREQUISITES: Chemistry 211 or its equivalent with a grade of “C” or better.

ATTENDANCE: It is expected that you will attend all of the class time scheduled. The guideline given in the college catalog will apply: you will be excluded from the class when more than one week’s worth of class time (about 9 hours) is missed. All students should be familiar with the Attendance Policy on P. 23 of the 2016-17 Pierce General Catalog at the link at the top of http://www.piercecollege.edu/schedules/catalog.asp. Class attendance is a strong predictor of success in college so please attend all classes!

REQUIRED TEXTBOOKS/MATERIALS: required during the first week of classes

- **Sapling Plus**: Is an online course space that you will be able to purchase and access through the Canvas shell for this course. The Sapling Plus platform provides access to the e-text (7th ed.); online HW, with feedback; an interactive metabolic map, and a variety of study and quizzing resources. This is the only “textbook” that you will be required to purchase for this class! The cost for six-month access is $40 and you may get a 21-day free trial. Help with Sapling Plus can be obtained at http://www.macmillanlearning.com/Catalog/techsupport.

- **Lehninger Principles of Biochemistry 6th Edition** by Nelson and Cox is optional (ISBN13:978-1429234146 or ISBN10:1429234148) If you want to have a hard copy of the text, I suggest purchasing this edition. It is similar to the 7th ed. but can be purchased inexpensively in various forms online.

- **Lab experiments** for the course will be posted on Canvas.

- **100 page duplicate-sheet Lab Notebook** for lab reports (about $20 + tax in the bookstore). Please bring to all labs.

- Safety goggles or safety glasses with side shields (from the bookstore or Home Depot) and a box of Latex gloves.

- Nonprogrammable scientific calculator

WHAT YOU WILL LEARN (Learning Outcomes):

1) Describe and evaluate the composition, structure, properties and functions of the majors groups of biomolecules including proteins, carbohydrates, lipids, (and to a lesser extent nucleic acids) and their chemical building blocks.

2) Describe and evaluate the characteristics of biological catalysts (enzymes) and their role in facilitating and regulating the reactions needed to accommodate the living state.

3) Describe and evaluate the central pathways of metabolism, their organization, regulation, and integration with respect to energy utilization in cells.

4) Demonstrate safe, efficient and independent use of traditional and modern laboratory techniques relating to handling of biochemical materials and prepare an accurate and complete written record of the results, including interpretive evaluation.
**CANVAS:**
Canvas is the Learning Management System for this class. This syllabus, handouts, lecture slides, lab experiments, announcements, access to Sapling Plus and other valuable course materials and resources will be posted in Canvas. It can be accessed at http://online.piercecollege.edu/ and there are tutorials to explain how to use it if you haven’t already. This system may also be used to give quizzes on line. If you are not receiving emails through Canvas, check to see that the email under your profile is accurate. There are tutorials to access in order to learn how to navigate Canvas.

**ACADEMIC DISHONESTY and CONDUCT:** Please be honest and respectful, it’s expected by your fellow students and me. Cheating in any form on any assignment will, at a minimum, result in a zero grade on that assignment and filing of a report describing the incident. Prior or future cheating incidents anywhere in the College could result in expulsion. Cheating includes: the copying or exchanging of information during exams or quizzes, including letting someone copy your material; using banned materials/information/devices during exams quizzes; and plagiarism (copying someone else’s work, lab data or writing and turning it in as your own). Exact reproduction of written materials from other students on any lab report will result in all parties receiving a zero. Please read more about Student Conduct and Academic Integrity starting on P. 39 of the 2016-17 Pierce General Catalog by following the link at the top of http://www.piercecollege.edu/schedules/catalog.asp.

**LEARNING ENVIRONMENT/COURTESIES:** Our learning experience in this class will involve a community. The more respect, support and courtesy within the community, the better you and your fellow students will perform. Please arrive on time and prepared, do not annoy or distract others during lectures, turn off all cell phones before class and put them away, respect your fellow students and obey all safety rules in the laboratory. Consumption of food or drinks (except water) is not allowed in lecture or lab.

**IMPORTANT DATES:**
- The last day to drop the class on line without receiving a "W" on your permanent record is **Feb. 20.**
- The last day to drop on-line without receiving a grade (it will show as a “W”) is **May 7.**
- A mandatory final exam will be given **Wed, May 31** from 9 am-noon.

**WORKSHOPS:**
Workshops meet for 125 minutes every Tuesday. They will focus on group work and improving your problem solving skills related to biochemical concepts. Course content will also be presented during this time and announced quizzes may be given. For best results, keep up with the assigned reading and homework.
LABORATORY: The laboratory is designed to expose you to experiments that introduce basic biochemical principles and techniques. It is where biochemists acquire knowledge in a “hands on” fashion. Each lab experiment will require a written lab report and all data will be written in a lab notebook. You will be expected to prepare your lab notebook for an experiment before each lab and then turn in a completed report. More details about how to organize the notebook and how to write reports will be distributed. You must pass the lab in order to pass the course.

WEB ENHANCEMENT: This class will be web enhanced, meaning that I will make use of a variety of technologies, accessible through the web, to help you understand the material. This will include Canvas and Sapling Plus, both referred to above.

COURSE GRADING POLICY: Just in case you ask, there will be no extra credit given!

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXAMS</td>
<td>Three exams will be given. <strong>No makeup exams will be given,</strong> so if you miss an exam your final exam score will replace it.</td>
<td>400</td>
</tr>
<tr>
<td>QUIZZES</td>
<td>Short quizzes will be given. Your lowest quiz score will be dropped. Quizzes may also be administered through Canvas. <strong>No makeup quizzes will be given.</strong></td>
<td>100</td>
</tr>
<tr>
<td>HOMEWORK/WORKSHOPS</td>
<td>There will be HW assigned through Sapling Plus and in your textbook each week. Working HW problems is essential for success in this class. There will be no credit/extensions given for late HW. Participation in the workshops will also be a part of the HW grade.</td>
<td>100</td>
</tr>
<tr>
<td>LABORATORY</td>
<td>The lab will be graded on your preparedness, technique, safety, cleanliness, and written reports.</td>
<td>200</td>
</tr>
<tr>
<td>FINAL EXAM</td>
<td>A comprehensive final must be taken on <strong>Wed, May 31, 9am-noon.</strong></td>
<td>200</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>1000</strong></td>
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You may calculate your grade at any time during the semester by using the formula: 
**Overall %** = (.40)(Exam %) + (.10)(Quiz %) + (.10)(HW %) + (.20)(Lab %) + (.20)(Final exam %)

Grading Scale

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>89-100%</td>
</tr>
<tr>
<td>B</td>
<td>77-88%</td>
</tr>
<tr>
<td>C</td>
<td>65-76%</td>
</tr>
<tr>
<td>D</td>
<td>56-64%</td>
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<tr>
<td>F</td>
<td>0-55%</td>
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CAMPUS RESOURCES

Students with Disabilities: Students with disabilities who need accommodations are encouraged to contact Special Services. The Special Services office is located in the Student Services Building or call 719-6430.

Counseling: Seeing a counselor in the Counseling Center is an important step to take to get career and/or academic help. They also offer valuable educational workshops to help you become a better student. Call 719-6440.

Transfer Center: Pierce College Transfer Center serves as a resource for students interested in university transfer activities. It is located in the Student Services Building and its phone # is 710-4126.

Student Health Center: Pierce College Student Health Center is committed to delivering professional, cost effective and confidential medical attention. All registered students, regardless of insurance, are eligible for the same no charge or low cost care. It is located in the Student Services Building and the phone is 710-4270.

Tutoring Help: The Center for Academic Success will provide tutoring assistance in a variety of subjects. It is located in the first floor of the Library & Learning Crossroads Building and you can call 719-6414.

Financial Aid: Financial aid is available! Contact the Financial Aid Office ASAP by calling 719-6428.

HOW TO PREPARE FOR THE SEMESTER

1. Sign into Canvas, view my picture and read my profile. Then post your picture and write a profile of yourself by clicking the icon right under Pierce College on the top on the left side and then profile.
2. How to Sign into Sapling Plus: after signing into Canvas, follow the Sapling link and then Create an Account. The Key Code is 64367. You can pay for it or take a 21 day free trial. Once in Sapling explore it, including the etext and some of the other links, I have posted a couple of assignments to get you familiar with Sapling and a review of organic chemistry that you can start working on. This site also has a number of links to help answer your questions about Sapling.
3. Start reading chapter one, an introduction to biochemistry. I will provide hard copies of the PowerPoint slides for Ch. 1 but for subsequent chapters I will encourage you to print them (or download if you bring a computer) before the lectures and bring them to class to take notes on.
4. Organic chemistry: review functional groups relevant to biochemistry and their properties including aldehydes; ketones; carboxylic acids and derivatives; and amines and derivatives.