# CHE 334 – Biochemistry – Block 7 (2017-18)

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## Course Overview and Objectives

Biochemistry occupies a funky space between biology, which everyone thinks they understand, and chemistry, which everyone loves to hate. In its simplest definition, biochemistry applies concepts from these two broader disciplines to explain cellular process. If you pressed me for specifics, I would simply say that biochemistry is focused on understanding the structures of biomolecules (like proteins and carbohydrates), and the function they serve in cellular processes. There is also the interesting possibility of how these molecules change their function under different conditions, opening my concept of biochemistry include the regulation of cellular processes or disease conditions. This particular course will focus on metabolic pathways and how they are regulated both within cells and between organs. This allows us to begin to understand cellular physiology, which I find much more interesting than simply memorizing steps within pathways. When you are done with this course, you should be able to…

* describe the physical, catalytic, and regulatory properties of proteins in metabolic pathways,
* illustrate how metabolic pathways are integrated within cells and between tissues,
* explain how a cell senses and responds to changes in physiological state.

These course objectives are quite broad and inherently complex, supported by many individual concepts. Some of these concepts you have seen in other courses, but hopefully there will be new things for you to learn as well. I hope you find this to be a sort of culminating experience—one that brings together things you have previously studied in isolation into a more holistic perspective.

The text for this course is *Biochemistry –* by Miesfeld and McEvoy (WW Norton & Co publishers). This is available as an “e-book” and we will be using the Smartworks online homework problems. This will give you feedback on specific issues you have with content. We will be focusing mainly on the chapters dealing with metabolism and signal transduction, but as with most textbooks, it serves as a reference book to help refresh your memory about general knowledge that you encountered in the prerequisite courses. Obviously, no course covers an entire textbook, and you will find I will not discuss everything in the few chapters we do use. Therefore, when you do run across interesting or confusing ideas in your studies, it is your civic duty to ask about them during class. If you don’t understand something, I can guarantee that there are others who are also having trouble understanding the same thing.

The College wants you to know that this course addresses several of our Educational Priorities and Outcomes but emphasizes knowledge, inquiry, and reasoning.

## Course Assignments and Grading Policies

Your grade will be a based on the total scores from the assignments in the following table.

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| 2 Exams | 250 pts |
| Lab work | 100 pts |
| Homework | 100 pts |
| Modeling case study | 100 pts |
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Here are the general descriptions for the course assignments. Grading rubrics will be provided when necessary.

Exams – There will be 2 exams intended to assess your factual understanding and application of the points listed in the learning objectives (separate attachment). Exams questions will be largely modeled after homework problems and the case studies or learning activities used for class. There will also be a question or two about concepts you encounter in lab. The final exam (150 pts total) will include one 50 pt. take home activity in which you create a metabolic map describing how the various cellular pathways operate under a given condition. I provide you with specific points to focus on, you draw a map showing how they are integrated.

Lab – You and one partner are to develop an experimental system that will generate reliable, reproducible, quantitative data. If you are competent, you will get it to work soon enough to answer a research question by the end of the block, at which time you are to construct and present a research poster on the last day of class. More directions are described in the separate lab syllabus.

Homework – These are (almost) daily assignments to help you reinforce and apply important concepts from class. Most of the homework is administered through the SmartWorks website, and these are low-level type learning questions. I will also provide you with more critical-thinking homework activities in the form of case studies and practice calculations. These case studies are to be regarded as a formal assignment, meaning that you need to use complete and grammatically correct sentences. I will spot check these for quality of your work and assign a grade of redo (0), low pass (), or high pass (+).” Your final homework grade is a cumulative average of all on-line homework and that handed out in class.

Modeling case study – This assignment requires you (with a partner) to use computer modeling software to visualize protein structure concepts. It is a formal writing assignment and details of how to develop this are described in a separate handout posted on Moodle.

## Academic Dishonesty

Part of the professional expectations for all scholars is to explicitly acknowledge the ideas, observations, or data created by others. Failing to do so is a form of academic dishonesty, and academic dishonesty is an extreme form of disrespect towards your peers and mentors. In its most general definition, academic dishonesty involves passing other people’s ideas or information as your own original work. Obvious examples include actions such as plagiarism (copying, paraphrasing, or stitching) or cheating on exams; however, there are other examples of academic dishonesty (an how to avoid them) that are outlined in your student handbook.

Students misrepresenting their work in this course (i.e. plagiarizing or cheating) will automatically fail the assignment and depending on the circumstances may receive a failing grade for the course. Violations of the College’s policies on academic dishonesty are also referred to the Registrar and the Dean of the College and will be dealt with as described in the student handbook.

A word about plagiarism… Collaboration is a great way to learn, and I strongly encourage you to work with others to help you understand the concepts. Nevertheless, I will expect you explain what you know in your own words. Copying verbatim, paraphrasing, or simply creating a cooperatively written document simply shows that you don’t take much pride in your work and makes it hard to convince others you are a valuable colleague to work with. Remember that this is not just about “getting through the class”; this is about you developing as an individual.

## Other Course Policies

Meeting Times We will have a formal class section every day from 9-11 am focusing on lecture and problem solving. The afternoons are reserved for lab with a structured session between 12:30-3 pm. It may be necessary for you to work in lab outside of class depending how efficient you are in planning and executing your project.

Office Hours I have an open door policy and am happy to stop what I am doing to answer your questions (unless I am helping another student). I am generally either in my office (RSC307) or in my lab (RSC218). You may also contact me to schedule a more specific time.

Due Dates Due to the short time frame of our block semesters, **I do not accept late assignments**. I will, however, arrange alternative deadlines for situations in which you have a college-sanctioned event (athletics, choir, band, etc.) that conflicts with the deadline or if you are facing some extenuating health circumstance. **Any alternative deadline must be arranged prior to the original deadline**, preferably at the time the assignment is given.

Exams There are 2 short answer/essay type exams intended to gauge your knowledge of course content and how well you can apply it to solving a problem. Exams will be available only on the day scheduled and **there will be no make-up exams if you happen to miss one**.

Attendance I do not officially require attendance simply because showing up for a meeting is “professional” behavior, and at this point in your life, being a student is your profession. Although it is possible to never miss a class, there are times when certain extenuating circumstances (i.e. illness or family emergencies) prevent us from meeting our professional obligations. If you find yourself in this situation, it **is your responsibility to notify me before the actual class meeting time that you will not be attending class**.

In the event that you need a late withdrawal on the 15th day, your attendance record is one of the things that I consider in deciding if you have made a “determined effort” to participate in the class. In the interest of defining “determined effort” with respect to attendance, **it is unlikely that you would miss more than two classes during the block**.

Withdrawals You may withdraw from any course on the 15th day of the block but only if 1) you have met the course attendance policy, 2) that you have completed all assignments, labs, and exams due on or before the 15th day, and 3) that you have, “*in the instructor’s opinion,* *made a determined effort to learn the material, complete the work, and participate in* class”.

Special Needs If you require academic adjustments because of a documented learning disability or health-related concern, **it is your responsibility to ensure that you have 1) documented your needs with the Registrar, and 2) notified me within the first 3 days of the block.** Accommodating students with special needs includes things such as help in taking notes, extra time for exams, or supervised tutorial support—it does not include opportunities for extra credit, different grading schemes, or alternative assignments. If you suspect you might have a learning disability but have not been diagnosed, you should consult with the Registrar or the Director of Counseling.