C483: Biological Chemistry
Summer Session 2017

Dr. Ben Burlingham
Office: Chemistry A206
Phone: 856-7782
Email: bburling@indiana.edu

Lecture:
10:30-11:20 AM, MTWRF
Discussion:
9:30-10:20 AM MW

Class Website: http://courses.chem.indiana.edu/c483/default.asp
Grades will be posted on Oncourse.

Instructor Office Hours: Just Show Up: 11:30-12:30 MTWR in Chemistry A206
By appointment: 9:30-10:30 TR in Chemistry A206

Class Organization:
In this three-credit course, there will be classroom lecture daily and discussion sections MW. Attendance is required in both lecture and discussion.

Associate Instructor: Sundhar Subramanian sunsubra@indiana.edu
Office Hour: 9:30-10:30 R (Please contact Sundhar for location)

Course Description: Introduction to macromolecular structure and function, enzymology, and metabolism.

Learning Objectives. At the completion of the course, students will be able to:

- Explain how the chemical structures of proteins, polysaccharides, lipids, and nucleic acids dictate their function in biological systems
- Solve qualitative and quantitative problems concerning solution pH, reaction thermodynamics, enzyme kinetics, membrane potential
- Use chemical principles to describe the metabolic processes of energy acquisition, storage, and utilization
- Describe metabolic regulatory processes, including those mediated by signal transduction
- Recognize the chemical motifs of redox reactions, hydrolysis, and decarboxylation in metabolic chemistry, and apply them to enzyme mediated organic chemistry reaction mechanisms and pathways
- Be able to apply fundamentals of biochemistry to the reading and comprehension of primary literature
- Introduction to fundamental biochemical experimental techniques

Text Materials:
Required: Essential Biochemistry 3ed by Charlotte Pratt and Kathleen Cornely. You might choose to get the book, the loose leaf, or an electronic option.

Grading:

Discussion exercises:	100 pts
Exams:	300pts
Final Exam:	200pts
Total	600 pts

Anticipated grading scale: A = above 90%, B = 80-89.9%, C = 65-79.9%, D = 50-64.9%, F=below 50%. Plus/minus grades will be awarded.

Homework: Working out problems is the only way to be successful in biochemistry. The problems will not be graded, but you should keep up with them from day to day. Many exam questions will be similar or the same as homework questions. There are two types of homework. *Reading guides* are lower-level questions that help you focus on what is essential in the chapter reading. If you can answer all these questions, you have a good baseline knowledge of biochemistry. *Book Problems* come from the book, and tend to be higher order thinking problems. These help you to apply your knowledge of biochemistry.

Discussion Exercises: During discussion section, you will be reviewing material learned in class by applying it to a Case Study. You will work individually or in groups to answer questions presented from primary literature. Each Case Study is worth 10 points. You may drop 1 of the 11 Case Studies for a total discussion grade out of 100 points. There are no make-up discussion exercises; any missed exercise can be counted as a drop.

Exams: Exams will be similar to the homework, with ~50% like the Reading Guides, ~40% like the Book Problems, and ~10% like the Case Studies. Three midterm exams, each worth 100 points, will be given from **9:30AM-11:30AM on June 20, June 30, and July 18 in C033**. The two hour time slot is designed so that you will not need to rush through the exam. Because biochemistry is a subject that builds upon previously learned material, all exams will be cumulative, but will focus on the material covered since the previous exam. No makeup exams will be given; if a valid excuse is given for missing an exam, the percentage grade on the final will be substituted for the missed exam grade. Please talk to the instructor at least a week ahead of the exam if there is a known conflict with one of the exams.

Final Exam: The final exam will be cumulative and worth two midterm exams. The final will be given from **8:00 AM- 11:00AM, July 28, in Chemistry 122**. If you have a class conflict during that time, you must contact the instructor at least one full week prior to the final.

Academic Honesty:
The determination of academic misconduct is at the discretion of the instructor. The sanctions may range from deduction of points to a failing grade for the class. In all cases, the infraction will be immediately reported to the Dean of Students as well as the dean or director of the student's school. Please read the *Code of Student Rights, Responsibilities, and Conduct* for further detail.

Withdraw: See the College's Policy on withdrawing from class at:
http://college.indiana.edu/ado/policies.shtml

My suggested plan for approaching C483 in the summer: Because summer session goes by so quickly and there is so much to do in C483, you should maximize the results you get for the amount of effort you put in. You can use the same amount of time in different ways and be more or less effective. If you avoid procrastination, you will do much better in the class!!! Here is how I would do it if I were you.

1. **Before class**, at minimum, I would skim the section to be covered in class, becoming familiar with the key concepts and terminology (look at titles and bold words.) Ideally, I would read the section and answer many of the Reading Guide Questions. If I ran into something I didn't understand right away, I would note it.
2. **During class**, because I have already become familiar with the topics and types of questions, I would take notes, writing more details on the types of questions I had problems with.
3. **AS SOON AS POSSIBLE after class** (while things are still fresh), I would finish the Reading Guide questions, then study them for half an hour. After that, I would attempt the Book Problems.
4. **Then start again for the next day!**

Tips for maximum success:

- **You need to attend all classes and discussions.**
- Practice, practice, practice. Solve all assigned homework (and maybe work on some that are not assigned!)
- Develop and use your own study aids, such as flashcards and study guides.
- Be persistent in asking questions. Take advantage of discussion sections. Come to office hours as soon as you are having problems.
- Form study groups.
- Don't get behind! One day behind puts you two days behind; you won't understand the next day because you missed the previous.

I want to see you succeed! My personal goal is to see every individual student succeed to the level he or she is willing to work. Please feel free to talk with me any time you want—keep me up to date with how you are doing.

Tentative Schedule: The schedule on the following page may be changed by the instructor to better meet the needs of the class.

Date	#	Chapter/Topics	Discussion
June 5	1	Ch 1/2	Lecture
continued	2	Ch 2	
June 6	3	Ch 2	
June 7	4	Ch 3	Acid-Base Review
June 8	5	Ch 3	
June 9	6	Ch 4	
June 12	7	Ch 4	Case Study
June 13	8	Ch 4/5	
June 14	9	Ch 5	Case Study
June 15	10	Ch 5/6	
June 16	11	Ch 6	
June 19	12	Ch 6	Enzyme Mechanism
June 20		**Exam 1 (Chs 1-6)**	
June 21	13	Ch 7	Lecture
continued	14	Ch 7	
June 22	15	Ch 8	
June 23	16	Ch 9	
June 26	17	Ch 10	Case Study
June 27	18	Ch 11	
June 28	19	Ch 12	Thermodynamics
June 29	20	Ch 12	
June 30		**Exam 2 (Chs 7-12)**	
July 3		**No class**	
July 4		**No class**	
July 5	21	Ch 13	Lecture
continued	22	Ch 13	
July 6	23	Ch 13	
July 7	24	Ch 13	
July 10	25	Ch 14	Case Study
July 11	26	Ch 14	
July 12	27	Ch 14	Case Study
July 13	28	Ch 15	
July 14	29	Ch 15	
July 17	30	Ch 17	Case Study
July 18		**Exam 3 (Chs 13-15)**	
July 19	31	Ch 17	Lecture
continued	32	Ch 17	
July 20	33	Ch 18	
July 21	34	Ch 18	
July 24	35	Ch 18	Case Study
July 25	36	Ch 19	
July 26	37	Ch 19	Case Study
July 27	38	Ch 19	
July 28		**Final Exam (ch 17-19 + cumulative)**	