

MMBB 300

SURVEY of BIOCHEMISTRY

Fall 2013

Description: Introductory course in biochemistry. We will study molecules and the metabolic reactions that occur in living systems.

Instructor: Dr. Martina Ederer,

Office: LSS 162

e-mail: mederer@uidaho.edu

Phone: 885-2037

Office hours: Mondays 8:30 - 10 am, or by appointment.

Class time: **MWF 7:30-8:20am**

Location: **TLC40**

Textbook: Moran, Horton, Scrimgeour and Perry, 2012.

Principles of Biochemistry, 5th ed.

or another, recent edition biochemistry textbook.

bbLearn: Notes, quizzes, and additional material will be posted there
Check there often!

Questions : Please, e-mail me questions as they arise or turn them in using your folders (see below). I will try to answer them quickly and then post the questions and answers on bbLearn. Thus, as the semester progresses there should be a collection available to you for immediate help. I hope you will find this a useful resource. Participate!

Groups: Several times during the semester you will be working in groups of 3-4 people and maybe asked to hand-in some group work. The groups will be formed during the first lecture. These works and activities are not graded, but provide an important means for you to succeed in the course. Participate!

Folders: Folders will be used as a means to get to know you and learn your names. Also, exams and other material will be handed back in them. You are responsible to take them out of the hanging folder carrier each day before class and return them to the carrier after class. They will be organized by your group.

In class polling: Frequently during the semester, I am planning to ask multiple choice questions during lecture. This is to assess your prior knowledge, your current understanding, as well as a wake-up method. We will be using **quiz 'n poll**. Please, create a gmail account for yourself, if you do not have one yet. Bring a phone, ipad, android or lab top to class. This system should work on any mobile device. It is free!



<http://quiz-n-poll.appspot.com/poll/tvnJmHskKDZ5IF9FyLW3zrA>

Learning outcomes: The learning outcomes for this course are in line with the general University Learning outcomes (<http://www.uidaho.edu/learningoutcomes>).

Upon successful completion of the course you should be able to:

- Identify the molecular structure of proteins, nucleic acids, carbohydrates, and lipids and distinguish between different modes of visualization
- Identify function of biological molecules and how structure relates to their function
- Explain the effect of the environment (e.g. pH, inhibitors, drugs, etc.) on biological processes and enzyme activity.
- Describe how enzymes work at the molecular level, kinetics and catalysis.
- Read, construct and interpret graphic representations of biological processes
- Describe the major metabolic pathways and how they are regulated in the context of the physiological state of the cell and the whole organism.
- Develop an understanding of the central role of biochemical processes in nutrition, agriculture and how physiological responses relate to environmental change.
- Explain how organisms obtain energy
- Apply basic biochemical principles to solve future problems
- Use the language of biochemistry and explain biochemical concepts to others
- Work cooperatively in groups and learn from your peers
- Learn in a self-directed and independent manner
- Apply your knowledge to new problems

Course mechanics: There are reading assignments by chapters listed on the syllabus. You are expected to do them before class so you have an idea on where we are headed in class. If I want you to focus on something in particular, I will note that in the lecture notes for that particular day. There will be on-line quizzes available most Fridays (see syllabus). The quizzes are designed to help you review the material we covered during the previous week and will be available Fridays after 12:00 pm until the following Monday 7 am (*i.e.* before class). You can only access the quizzes once, so you need to plan well and set aside sufficient time to complete them. They will be worth 5 pts each. There will be no make-up! There will also be interactive group activities throughout the course. These activities are not graded, but I strongly recommend that you actively participate. Student participation and collaboration with your peers during the course has been shown to be beneficial in succeeding in a course. Some of the activities are based on your understanding of the material and your ability to apply your knowledge to a new problem. ***Studies have shown that students understand material better and retain the information longer if they construct their own knowledge***, so I will not always be giving the answers to the questions in the activity, but rather asking questions to help you find the answers and verifying that you have reached the “correct” conclusions. I may ask you to take a minute at the end of lecture to let me know where you are and where you think you might have problems.

You are responsible for all the material covered during class, thus you need to be able to depend on your own notes that you take during class, **not just** the lecture notes that I post. Also, let me know if there is a topic that you would like to see covered because you think it is relevant to your field of study. I will try my best to accommodate your requests. Another important aspect for success is: **Attend class!** From my experience, students do better if they regularly attend class!

Studying for the exams: I encourage you to study together and work on problems together! Make sure you take notes during class, then **rewrite** the notes and make sure you understand the material. Do not “just memorize”. **Taking notes and rewriting** them will make them yours! You are expected to **understand** the material and **apply** your newly gained knowledge to new scenarios. Use the examples from class as a guide. Explain things to others! Even if you think you can manage on your own or think you understand everything well. Explaining the material to others helps you realize what you know and what you do not know. Science is a collaborative deal! That said however, the exams will **not** be a collaborative effort, but an assessment of your individual grasp of the material.

Grading: We will have a number of different types of assignments, quizzes and activities. Most of your grade will depend on four exams and a cumulative final exam. The final will replace the lowest score in one of the prior exams.

The breakdown of points will be:

Exams:	100 pts each	→	400 pts
Final:	100 pts	→	will replace the lowest score
Quizzes and activities		→	<u>60 pts</u> 460pts

Grade assignment:	A:	earned for a score of 90 % or higher
	B:	earned for a score of 80% to 89%
	C:	earned for a score between 68% to 79%
	D:	earned for a score of 55% or more
	F:	earned for a score of less than 55%

Extra Credit: Do not expect extra credit! We are already covering a lot of material on which I would like you to focus. I do not believe in adding more to your load. However, there may be occasional opportunities for bonus points for class participation.

Exam schedule: All exams are scheduled from **7:30 to 8:20 am**. Plan to finish in the time allotted. Extra time cannot be given due to classroom scheduling.

Exam I: **Wednesday, Sept. 18**

Exam II: **Friday, Oct. 11**

Exam III: **Monday, Nov. 4**

Exam IV: **Friday, Dec. 6**

Final: **Friday, Dec. 20, 7:30 to 9:30 am.**

Make-up Examinations: Make-up examinations will be given **only** for a **valid** reason (illness or family emergency) or by prior arrangement because of **necessary** obligations and responsibilities to the University of Idaho (field trips or attendance at professional meetings). These missed exams **must** be made up within a timely manner.

Your responsibility: This is your biochemistry course. You are responsible for your own learning. If you need help, go and look for it! There are **two** hours of office hours available to you **and** you can set up additional appointments with me. Further, you can e-mail me if you have questions and I will try to answer them as soon as I can. I am available! Also, use the web, but use common sense and consider the source. For many concepts and topics, you can find videos and other useful material. Feel free to share links to resources that you find helpful with the class. You can e-mail me the link so I can post them. Generally, all material covered in class is fair game in the exams. I expect you to be able to apply your newly gained knowledge to new scenarios. That is what makes science interesting and fun!

Academic Integrity: Exams will be proctored by the instructor(s). Bring student or driver's photo ID to the exams. Do not wear a hat on exam day. Any cases of cheating, giving or receiving assistance during an exam, plagiarism, falsification of records, or similar behavior will be handled according to the Student Code of Conduct, Article II-Academic Honesty (p4, 2007)

<http://www.uidaho.edu/~media/Files/orgs/Student%20Affairs/DOS/Judicial%20Affairs/UI%20Student%20Code%20of%20Conduct.ashx>).

University of Idaho Classroom Learning Civility Clause: In any environment in which people gather to learn, it is essential that all members feel as free and safe as possible in their participation. To this end, it is expected that everyone in this course will be treated with mutual respect and civility, with an understanding that all of us (students, instructors, professors, guests, and teaching assistants) will be respectful and civil to one another in discussion, in action, in teaching, and in learning. Should you feel our classroom interactions do not reflect an environment of civility and respect, you are encouraged to meet with your instructor during office hours to discuss your concern. Additional resources for expression of concern or requesting support include the Dean of Students office and staff (5-6757), the UI Counseling & Testing Center's confidential services (5-6716), or the UI Office of Human Rights, Access, & Inclusion (5-4285).

Drop date: The last date to drop with no notation is Sept. 9th, 2013, the last day to withdraw is Nov. 1, 2013 with a \$5 fee per class and a "W" appearing on your transcript.

General Notes: If you have concerns about this class, do not hesitate to get in touch with me. I am available to you. Stop by my office, if I am there I will make time for you if at all possible or schedule an appointment e-mail is the best way to get in touch with me and set up an appointment. Leaving a message on my phone is not a good way to leave a message,

Last not least: Let's have fun with biochemistry this Fall semester!

	Date	Day		Topic	Reading	
1	8/26	M		Introduction		Activities, 10 pts
		W		Overview	Ch 1	
		F		Water and pH	Ch 2	
2	9/2	M	LABOR DAY			
		W		Water and pH	Ch 2	
		F		Amino acids	Ch 3	Quiz, 5 pts
3	9/9	M		Amino acids	Ch 3	
		W		Working with proteins	Ch 3	
		F		Proteins	Ch 4	Quiz, 5 pts
4	9/16	M		Proteins	Ch 4	
		W	Exam I			
		F		Myoglobin	Ch 4	
5	9/23	M		Hemoglobin	Ch 4	
		W		Enzyme kinetics I	Ch 5	
		F		Enzyme kinetics II	Ch 5	Quiz, 5 pts
6	9/30	M		Enzyme mechanism	Ch 6	
		W		Enzyme mechanism	Ch 6	
		F		Vitamins	Ch 7	Quiz, 5 pts
7	10/7	M		Lipids	Ch 9	
		W		Membranes	Ch 9	
		F	Exam II			
8	10/14	M	Midterm week	Carbohydrates	Ch 8	
		W		Metabolism	Ch 10	
		F		Metabolism	Ch 10	Quiz, 5 pts
9	10/21	M		Glycolysis	Ch 13	
		W		Glycolysis	Ch 13	
		F		Gluconeogenesis	Ch 13	Quiz, 5 pts
10	10/28	M		Glycogen	Ch 14	
		W		Glycogen	Ch 14	
		F		Special topics		Quiz, 5 pts
11	11/4	M	Exam III			

		W		TCA	Ch 13	
		F		TCA	Ch 13	Quiz, 5 pts
12	11/11	M		ETC	Ch 14	
		W		ETC	Ch 14	
		F		ATP synthesis	Ch 14	Quiz, 5 pts
13	11/18	M		PS	Ch 15	
		W		PS	Ch 15	
		F		Lipid metabolism	Ch 16	Quiz, 5 pts
14	11/25	M-F	Thanksgiving break			
15	12/2	M		Amino acid metabolism	Ch 17	
		W		Nucleotide metabolism	Ch 18	
		F	Exam IV			
16	12/9	M	Dead week	DNA	Ch 19	
		W		DNA	Ch 19	
		F		DNA	Ch 20	
	12/20 FINAL	F	7:30 – 9:30 am	FINAL 30% new 70% comprehensive		

The syllabus is subject to change. Prior notice will be given.

The chapter assignments are broad guideline. If I want you to focus on a particular section in more detail, I will note that in the lecture notes otherwise familiarize yourselves with the topic before class. The lecture notes will be posted at least 24 hours before the respective lecture.

This is your class, if you have topics related to biochemistry that you are particularly interested in, let me know. It would be great to be able to incorporate some of your ideas!

Quizzes are on-line and available on bbLearn most Fridays from 12pm , noon until 7 am the following Monday. These quizzes are available only once and no make-up will be given. Set away a time where you will be undisturbed and uninterrupted! These are easy points!