

Principles of Biochemistry 2 — MG6011

MG6011, given in the spring semester, will continue from where MG6010 left off. After a brief review of transcription and translation, we will discuss both prokaryotic and eukaryotic gene regulation, which will end our discussions on DNA replication, transcription and translation. We will then move to a discussion of membranes, and membrane components, followed by carbohydrate structure and an introduction to metabolism. The rest of the semester will explore various pathways in metabolism, including glycolysis, gluconeogenesis, the Krebs tricarboxylic acid cycle, oxidative phosphorylation, the hexose monophosphate shunt pathway, the synthesis and degradation of glycogen, the synthesis and degradation of fatty acids, amino acid metabolism and the urea cycle, and the synthesis and degradation of purines and pyrimidines. Diseases relevant to these pathways will be emphasized, as will the relationships between different pathways and the complex regulatory events that ensure that appropriate pathways are activated, and inactivated, under various conditions.

Meeting Times

The class will meet in the Medical Sciences Building, room 3051, on Tuesdays and Thursdays, starting at 4:30 pm. Most classes will end at 5:55 pm, but on exam days the class will go until 6:30 pm. The first class will begin at 4:30 pm, on January 13, 2015.

Office hours are held on Tuesdays and Thursdays from 3:00 to 4:00 pm in MSB 2253. The class will be notified if I cannot be present at a scheduled office hour session. Extra office hour sessions will be held before exams, and meetings can also be scheduled at other times by making an appointment.

Podcasts

All of the lectures of the MG6011 course will have the audio portion of the lecture available from the audio files section of the course. The audio files are usually loaded immediately after class. There is an initial test audio file, which is from three years ago (it references Autumn 2009). If you can successfully download that file, your podcasts should be set up correctly.

There have been times that the recording system has failed - in those cases I will post the corresponding lecture from the previous year, which will be similar to what we discuss this there (but not identical).

Problem Sets

There are 7 problem sets which be discussed during the course. The schedule indicates on which date these problem sets will be discussed in class. The problem

sets are designed to help the student learn how to solve problems in biochemistry, and resemble questions that will appear on examinations. The answers to the problem sets are not collected from students, nor are they posted. In addition, our graduate assistant will have optional problem set reviews during the course as well. These will occur immediately after the class ends.

Grading Policies and Test Information

There will be three exams during the quarter, the first worth 150 points (February 24, 2015), the second 150 points (April 7, 2015), and the third exam, also worth 150 points (April 28, 2015). Each exam is cumulative (material learned for a previous exam needs to be remembered for subsequent exams). Students are expected to take the exams when scheduled. Any unexcused absence will result in a grade of zero for that exam, and absences must be approved in advance. If ill, a doctor's note will be required to have a valid absence from an exam, and the doctor must have been seen on the day of the exam.

It is anticipated that the course will be graded on a curve, but there are certain targets that will guarantee a passing grade. A final score of 405 points or more will guarantee an A; a final score of 360 points or more will guarantee a B; a final score of 315 points or more will guarantee a C; and a final score of 270 points or more will guarantee at least a D. Thus, even if all students score above 405 points for the year, all students will receive an A. If the exams are more difficult than anticipated, then these numbers may drop, but there is no guarantee that such an adjustment will occur.

If a student is registered for graduate credit the lowest passing grade allowed by the Registrar is a C. Thus, if a student registered for graduate credit ends the course in the C- range or below, a grade of F will be reported.

Books

The textbook for the entire year will be Stryer's Biochemistry (the authors are Jeremy Berg, John Tymoczko and Lubert Stryer), seventh edition, published by WH Freeman, Inc. It should be available either in the University Bookstore or at Dubois Bookstore. This is the Stryer with the Grey cover (first author is Berg). In past years the bookstore has not had sufficient copies - you can also purchase the book from Amazon.com - http://www.amazon.com/gp/product/0716787245/sr=8-1/qid=1154447125/ref=pd_bbs_1/104-6152150-3341510?ie=UTF8

This book is the same as was used for the MG6010, in the fall semester.

Old editions of Stryer will also be acceptable; you will just have to find the corresponding chapters to read.

Date	Class Number	Topic	Reading	Problem Set
1/13/15	1	Review transcription/translation, begin prokaryotic gene regulation		Problem Set #1
1/15/15 - Room 2351	2	Prokaryotic/Eukaryotic gene regulation	Chapter 32	
1/20/15	3	Eukaryotic gene regulation		
1/22/15	4	Finish eukaryotic gene regulation/Membranes	Chapter 12	Problem set #2
1/27/15	5	Finish membranes/Introduction to metabolism/carbohydrates	Chapters 11 and 15	
1/29/15	6	Finish metabolism introduction/start problem set 1		
2/3/15	7	Continue discussing problem set 1 and problem set 2		
2/5/15	8	Glycolysis	Chapter 16	Problem set #3
2/10/15	9	Finish Glycolysis/TCA cycle	Chapter 17	
2/12/15	10	Finish TCA cycle		
2/17/15	11	Discuss Problem set 3		
2/19/15 - Room 2351	12	Oxidative phosphorylation	Chapter 18	Problem Set #4
2/24/15 (until 6:30 pm)		Exam #1 (covers classes 1-10) (150 points)		
2/26/15	13	Gluconeogenesis/HMP shunt	Chapter 16 (pages 479-491) Chapter 20 (pages 601-611)	
3/3/15	14	Finish HMP shunt/begin discussion on Problem set #4		
3/5/15	15	Finish Problem Set 4		
3/10/15	16	Glycogen metabolism	Chapter 21	Problem set #5
3/12/15	17	Glycogen metabolism/Start fatty acid metabolism	Chapter 22	
3/17/15		No class - SPRING BREAK		
3/19/15		No class - SPRING BREAK		

3/24/15	18	Fatty acid metabolism		
3/26/15	19	Fatty acid metabolism		
3/31/15	20	Integration (glycolysis through fatty acids)		
4/2/15	21	Discuss problem set #5		
4/7/15 (until 6:30 pm)		Exam #2 (covers lectures 11 through 21) (150 points)		
4/9/15	22	Urea cycle/Begin amino acid metabolism	Chapters 23 and 24	Problem Set #6
4/15/15	23	Amino acid metabolism		
4/16/15 - Room 2351	24	Nucleotide metabolism	Chapter 25	Problem Set #7
4/21/15	25	Finish Nucleotide metabolism/start Problem set 6		
4/23/15	26	Finish Problem Sets 6 and problem set 7		
4/28/15 (until 6:30 pm)		Final Exam (lectures 22-26 and comprehensive beginning with prokaryotic gene regulation) (150 points)		