

## BIO 152 Principles of Biology III: Molecules & Cells

Fall 2008

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Office hours: Mondays and Thursdays, 2:30-4pm, or by appointment

This course seeks to explore life at the molecular and cellular levels. Topics covered are Mendelian and molecular genetics including the central dogma as well as basic biochemistry of cells, including structure and function of nucleic acids, proteins, carbohydrates, and lipids. Cellular organelles will be examined with respect to their roles in physiology and energetics. Technological applications of molecular and cellular biology will also be discussed.

Prerequisites for this course are BIO 151 and CHM 104. Any student who is concerned about his or her preparation for this class is encouraged to speak with me as soon as possible. Weekly **office hours** will be held at the times listed above. You may feel free to simply drop-in during these times; meetings will be held on a first-come, first-served basis. To meet with me at any other time, please send me an email first to schedule an appointment. I would be happy to talk with you and encourage you to come see me if you have any questions, concerns, or difficulties with the course. I also suggest you take advantage of supplemental instruction offered through the Academic Resource Center in association with this course.

**Class** will meet from 10:30-11:20 am on Monday, Wednesday, and Friday in Trumbower 130. Please plan to arrive at lecture on time; frequent tardiness will not be well tolerated. If you must miss a particular lecture, there is no need to notify me. It is your responsibility, however, to obtain notes and any additional course materials from a classmate.

Reference materials: The **textbook** for this course is *Biology*, 7<sup>th</sup> edition (2005) by Campbell and Reece. On the lecture schedule, chapters corresponding to topics we will cover throughout the course are listed. The text is best used to reinforce and clarify material discussed in class; it is not an adequate substitute for attendance and attention in lecture. Specific pages suggested as reference for each class will be supplied as part of the Powerpoint-based lecture. Powerpoint lectures will also be posted on Blackboard for your review *after* class.

For several aspects of this course, we will make use of **Blackboard**, the on-line course utility supported by Muhlenberg College. The URL is <http://blackboard2.muhlenberg.edu/>. You will need to log on to the system to access Powerpoint lectures, take and submit quizzes, and view other course updates and postings. If you need more information, please contact OIT for assistance.

For most weeks in the semester, **quizzes** will be posted in Blackboard by 5 pm Friday and must be completed and submitted electronically by 10 am the following Monday. The main purpose of these exercises is to help you assess your understanding of the course material. Quizzes will be graded on a pass/fail basis. Answers to quizzes will be discussed, typically during recitation. You are strongly encouraged to print out a copy of your completed quiz; this will facilitate review or future study, as the quiz will no longer be accessible after its due date.

Attendance is *required* at weekly **recitation** meetings (held on Tuesday or Wednesday afternoon in Shankweiler 243S, as scheduled). In addition to reviewing quizzes, we will discuss new information or engage in exercises designed to further your understanding of course topics. In some weeks, you

will also be assigned exercises to complete *before* coming to recitation. A portion of your overall course is based on active participation in recitation and successful completion of assignments and quizzes. Material covered in recitation may also serve as a source of exam questions. Please see the attached schedule for recitation and quizzes for more information.

Please recognize that attendance at your assigned **laboratory** session every week is also *required*. Please consult lab syllabus and talk with your lab instructor for more details on the laboratory component of the course.

Three **in-class exams** will be given on the dates indicated. These assessments will cover the block of course material immediately preceding that exam. Makeup examinations will be only be given in the event of severe illness or family emergency; documentation from an appropriate College official will be required. The **final exam** will be scheduled mid-semester by the Registrar to take place during Finals week. This exam will focus on material covered since Exam III; however, eight (8) percentage points of your course grade will be derived from a cumulative component of the Final. More information on the specific format of exams will be discussed in class.

**Course grades** will be determined on the basis of several components described above. Contributions to the final course grade will be as follows:

In-class exams	39% (3 X 13%)
Final exam	21% (13% on Cell Biology Unit; 8% cumulative)
Laboratory component	30%
Recitation	10%

The grading scale for the determination of final letter grades is listed below; in addition, pluses (+) and minuses (-) may be used to denote the higher and lower end of each range.

A: 88% and above; B: 76-87%; C: 62-75%; D/F: below 62%

**Extra credit** may be obtained by attending Biology Department seminars and writing a review; please see separate handout.

**All course requirements are to be performed under the bounds of the Academic Behavior Code.** Please familiarize yourself with this document and understand that a student who violates the Code may receive a failing grade for the course.

Any student with documented disabilities or special needs who requires accommodations in this course should schedule an appointment to discuss these issues with me at the beginning of the semester. Please note that students with disabilities requesting classroom or course accommodations must have completed an application/approval process through the Office of Disability Services prior to the development and implementation of an Accommodation Plan. Please contact this office for more information.

**BIO 152 Principles of Biology III: Molecules & Cells**  
**Lecture schedule**

**Dr. Amy Hark**  
**Fall 2008**

Week	Date	Unit	Topic	Relevant chapters in Campbell and Reece
1	M 8/25	GENETICS	Introduction; Cell cycle and mitosis	Chapter 12
	W 8/27		Meiosis	Chapter 13
	F 8/29		Mendelian genetics	Chapter 14
2	M 9/1		Beyond Mendel	Chapters 14, 15
	W 9/3		More modes of inheritance	Chapters 14, 15
	F 9/5		Chromosomal basis of inheritance	Chapters 14, 15
3	M 9/8		DNA - Structure	Chapter 16
	W 9/10		DNA - History	Chapter 16
	F 9/12		DNA replication	Chapter 16
4	M 9/15	MOLECULAR BIOLOGY	Review	
	W 9/17		<b>EXAM I</b>	
	F 9/19		Transcription and RNA processing	Chapter 17
5	M 9/22		Translation	Chapter 17
	W 9/24		DNA Technology I	Chapter 20
	F 9/26		DNA Technology II	Chapter 20
6	M 9/29		Prokaryotic genes and genomes	Chapter 18
	W 10/1		Eukaryotic gene regulation	Chapters 19, 21
	F 10/3		Eukaryotic genomes I	Chapters 16, 19
7	M 10/6		Eukaryotic genomes II	Chapter 20
	W 10/8		Viral genomes	Chapter 18
	F 10/10		<b>No class – Fall Break</b>	
8	M 10/13	BIO-CHEMISTRY	Review	
	W 10/15		<b>EXAM II</b>	
	F 10/17		Carbon chemistry	Chapters 4, 5
9	M 10/20		Macromolecules I	Chapter 5
	W 10/22		Macromolecules II	Chapter 5
	F 10/24		Protein structure & function	Chapters 5, 8
10	M 10/27		Introduction to metabolism	Chapters 8, 9
	W 10/29		Respiration I	Chapter 9
	F 10/31		Respiration II	Chapter 9
11	M 11/3		Respiration III	Chapter 9
	W 11/5		Photosynthesis I	Chapter 10
	F 11/7		Photosynthesis II	Chapter 10

**Lecture schedule, *continued*****Fall 2008**

Week	Date	Unit	Topic	Relevant chapters in Campbell and Reece
12	M	11/10	Review	
	W	11/12	<b>EXAM III</b>	
	F	11/14	CELL BIOLOGY	Chapter 6
13	M	11/17	Cytoskeleton	Chapter 6
	W	11/19	Membranes and transport	Chapter 7
	F	11/21	Cell-cell communication	Chapters 11, 45
14	M	11/24	Signal transduction	Chapters 11, 45
	W	11/26	Cancer I	Chapters 12, 19
	F	11/28	<b>No class</b> – Thanksgiving break	
15	M	12/1	Cancer II	Chapters 12, 19
	W	12/3	Regulation of the cell cycle	Chapter 12
	F	12/5	Review	

The **FINAL EXAM** will be held during finals week and is scheduled by the Registrar mid-semester.

*Please note that this schedule represents an outline of topics to be covered and may be subject to change.*

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**Recitation and quiz schedule**

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<u>Week</u>	<u>Recitation Tuesday or Wednesday</u>	<u>Quiz assigned Friday?</u>
1	Pre-assessment Cell division problems	Yes (1-08)
2	Review Quiz 1-08 Genetics problems	Yes (2-08)
3	Review Quiz 2-08 More genetics practice	Yes (3-08)
4	<i>Review Quiz 3-08 in Monday review session</i> Bioinformatics 1 assignment (PubMed/NCBI Books) <b>due</b>	<b>No</b>
5	Genetic code problems Address exam questions	Yes (4-08)
6	Review Quiz 4-08 Applications of DNA technology	Yes (5-08)
7	Review Quiz 5-08 Bioinformatics 2 assignment (sequence analysis) <b>due</b> Iron regulation exercise	Yes, assigned Wed. (6-08)
8	<i>Review Quiz 6-08 in Monday review session</i> Plasmid mapping	<b>No</b>
9	Bioinformatics 3 assignment (BLAST) <b>due</b> Address exam questions	Yes (7-08)
10	Review Quiz 7-08 Macromolecule problems	Yes (8-08)
11	Review Quiz 8-08 Amino acid bingo	Yes (9-08)
12	<i>Review Quiz 9-08 in Monday review session</i> Bioinformatics 4 assignment (NCBI structure) <b>due</b>	<b>No</b>
13	Organelle and cytoskeleton problems Address exam questions	Yes (10-08)
14	<i>Review Quiz 10-08 in Wednesday's lecture</i> <b>No recitation meeting</b>	Yes, assigned Wed. (11-08)
15	Review Quiz 11-08 Cell cycle exercises Post-assessment	<b>No</b>

*Quizzes should be submitted as instructed in Blackboard and are due the following Monday by 10am. Bioinformatics assignments will be provided by the Friday before they are due; please note that these assignments are to be completed prior to the start of the recitation period indicated. Schedule is tentative and subject to change.*