

# General Biology 111

## Fall 2016

### Lecturer & Coordinator:

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### Where can I find things on the web?

- **Blackboard** <https://umb.umassonline.net/> this site has the **after class** and **administrative** materials:
  - Class Notes & Class Video – posted after each class
  - Exams and solutions – posted after each exam
  - iClicker registration
  - Grades
- **World-Wide Web Site:** <http://intro.bio.umb.edu> this site has a link to the **On-Line Lab Manual, Blackboard, and the Bio 111 SPOC**
- **The Bio 111 SPOC** (see links on Blackboard and the course web site) this site has materials to help you **get ready for each class:**
  - Video, readings, practice problems, tutorials, etc.
  - Information about each exam

### Required Materials:

1. **Lab Manual:** The Lab Manual is *essential* for performing the lab activities; the lab manual also contains pre-labs, worksheets, etc. You can purchase a 3-ring binder with the Lab Manual from Quinn Reprographics (Quinn LL-024) for \$13.50. It is also available for free download on the course website. I *strongly* advise you to buy the printed version. You must bring your lab manual to every lab session.
2. **Lecture Handouts & A Problems Approach to Introductory Biology (APAIB)** For each class, there is an essential handout with figures, questions, data, etc. APAIB contains practice problems (both on paper and computer-based) will be used in lab, class, and at home and provide *essential* practice with the material for the exams. You can purchase a 3-ring binder with both the Lecture Handouts and APAIB from Quinn Reprographics (Quinn LL-024) for \$26.00. Both are also available for free download on the SPOC and course website, respectively. I *strongly* advise you to buy the printed version. You must bring Lecture Handouts and APAIB to every class session.
3. **iClicker Transmitter:** All students must have an iClicker transmitter (see later for details) and bring it to each lecture. These are available from many sources including the UMB Bookstore. Please note that you will need to be able to read the serial number of your iClicker in order to register it; so, if you buy a used iClicker, be sure that you can read the 8-character serial number on the back of it. Any of the different iClicker models (“iClicker”, “iClicker +” or “iClicker 2”) will work just fine in Bio 111. You must bring your clicker to every class session.

### Other Requirement

You must sign up for a free account at the 7.00x UMass SPOC. “SPOC” stands for “Small Personalized On-Line Course” – more on what this means later. You will need access to this to prepare for class sessions, labs, and exams. You will receive an e-mail from edX.org – they are the folks that host the SPOC – you should respond to the e-mail and sign up as soon as you get it. **You must use your UMB e-mail to register.** You will not get credit for your SPOC work if you do not register **exactly** as described.

- What is it? In the spring of 2013, I worked with a team of about 20 people at MIT to develop a Massively Open On-line Course (MOOC) called “7.00x”. This course covers the material in Bio 111 and includes lectures, supporting videos, problem sets, and exams. I extensively re-organized these materials to create a custom version for Bio 111; this is the “7.00x\_UMass SPOC”.
- How to use the SPOC materials: The SPOC materials are organized by class “sessions”:
  - All of the materials are accessible from the “Courseware” tab.
  - **Before each class session:**
    - *Watch the lecture and answer the “Core” and “Challenge” questions.* The *Core* questions are easier and you have at least two tries to get them right. The *Challenge* questions are harder; you have an unlimited amount of tries to get them right and, after your first try, you can look at the answer. They are due by 12:00 noon on the day of the corresponding class session and will not be accepted late.
    - You may find it useful to look at the questions *before* watching the video. That way, you can have an idea what to watch for.
  - **In class**, we will go over questions and problems including those from APAIB.
  - **After class**, to prepare for the exam, go over the problems including the APAIB problems and “Extra Practice Problems” until you are confident that you can solve problems like these.
  - **Looking at the answers.** For all of these problems, including those in APAIB, we have provided detailed solutions. These solutions are an essential part of learning the material; you are strongly encouraged to read them carefully. **However**, you should only read them *after* you have tried to write out an answer to the question.
- Can I work with others on the SPOC problems? It depends on which type of problem:
  - **Core Problems:** These must be done on your own. You may not discuss answers with other students or post them on the web, etc.
  - **Challenge Problems:** You are encouraged to talk with other students about these.

### Optional Textbook

The 7.00x SPOC has two built-in free on-line textbooks, so will not likely need a paper and ink textbook for this class. If you find that the on-line textbook is not what you need, any of the popular introductory-level college books (“Biology” by Campbell is one example) will be useful.

### Other course details:

Course Blackboard site: Bio 111 also has a site on Blackboard (<https://umb.umassonline.net/>). This site has links for the iClicker registration, recorded class sessions, and many of your grades. It also has links to the lab discussion boards and data blogs.

# Course Schedule

Date	In-Class Activity	Lab & [Due Date]
W 7-Sep	01 Introduction	NONE
F 9-Sep	02: Building Molecules	
M 12-Sep	03: Drawing Molecules	01: Chemical Structures
W 14-Sep	04: Hydrogen Bonds	
F 16-Sep	05: Reading Molecules	
M 19-Sep	<b>Exam 1: Making Molecules</b>	02: Chromatography
W 21-Sep	06: Protein Structure; Approximate	[Lab report due week of 9/26]
F 23-Sep	07: Protein Structure; Real	
M 26-Sep	<b>Exam 2: Reading Molecules</b>	03: Protein Structure
W 28-Sep	08: Enzymes	
F 30-Sep	09: Glycolysis, etc.	[Lab Report due week of 10/3]
M 3-Oct	<b>Exam 3: Proteins</b>	04: Amylase
W 5-Oct	10: Pathways	
F 7-Oct	11: Basic Genetics	[Lab Report due week of 10/10]
M 10-Oct	<b>Columbus' Day</b>	05: GFP I: Purification
W 12-Oct	12: Mitosis, Meiosis, etc.	
F 14-Oct	13: Sex-linkage	
M 17-Oct	<b>Exam 4: Enzymes &amp;c.</b>	06: Genetics Practice Problems & VGLI
W 19-Oct	14: Pedigrees I	
F 21-Oct	15: Pedigrees II	
M 24-Oct	<b>Exam 5: Genetics I</b>	07: Aipotu I: Genetics & Biochemistry
W 26-Oct	16: Proteins & Genetics	[Lab Report due week of 10/31]
F 28-Oct	17: Genetics Limitations	
M 31-Oct	<b>Exam 6: Genetics II</b>	08: PTC I: DNA extraction & PCR
W 2-Nov	18: Genes are DNA	Arabidopsis Phenotypes
F 4-Nov	19: DNA Structure & Replication	[Lab Report due week of 11/7]
M 7-Nov	20: Transcription & Translation	09: Giant DNA
W 9-Nov	21: Introns	
F 11-Nov	<b>Veterans' Day</b>	[Lab report due week of 11/14]
M 14-Nov	<b>Exam 7: Gene Expression</b>	10: GFP II: Transformation
W 16-Nov	22: Mutations	IGV Practice
F 18-Nov	23: Integration	[Lab Report due week of 11/28]
M 21-Nov	<b>Exam 8: Integration</b>	NONE
W 23-Nov	24: Recombinant DNA I	
F 25-Nov	<b>Thanksgiving</b>	
M 28-Nov	25: Recombinant DNA II	11: Aipotu II: Biochemistry & Molecular Biology
W 30-Nov	26: Recombinant DNA III	
F 2-Dec	27: Genetic Disease I	[Lab Report due week of 12/5]
M 5-Dec	<b>Exam 09: Recombinant DNA</b>	12: PTC II: Gel Electrophoresis
W 7-Dec	28: Genetic Disease II	
F 9-Dec	29: Genetic Disease III	
M 12-Dec	<b>Exam 10: Genetic Disease</b>	NONE
W 14-Dec	30: Gene Therapy	

Tutor-led Study Groups: There are several tutors to help students in Bio 111. Tutoring is free and open to all students. The tutors will lead weekly study group workshop sessions where they will go over that week's APAIB problems as well as answer questions. Regular attendance is strongly encouraged. You can sign up for tutoring at <http://requesttutor.cs.umb.edu:8080/oats/> Tutoring usually starts in the second week of class.

Class Session Video I make a digital audio & video recording of each class session and post these Blackboard. **DANGER**: these are not a substitute for attending class!!!

Class Session Notes from this year. I am using a Tablet PC to write notes on the screen. After each lecture, I will post these notes on the course website.

iClicker Beginning with the second class session, several times during the class, I will ask a short multiple-choice question to make sure that you are able to apply the material we are working with (note that the exams will **not** be multiple-choice).

You will submit your answer as described below; you will receive credit for each answer you submit, whether it is correct or not. Answers are due during the lecture on the day the question was asked; no late answers will be accepted; there are no make-ups for missed iClicker questions. Note that clicking in an answer for another student is considered cheating and will not be tolerated.

Using an iClicker This looks like a small TV remote control. You transmit your answer to the receiver in in the auditorium and the computer logs your answer.

**You will need to register your iClicker serial number so you can get credit.** You do this by going to the course Blackboard site, clicking on the "Register your iClicker" link, and following the directions there. You should not register through iClicker.com.

### **Course Policies:**

Class Sessions: Class Sessions meet in Lipke Auditorium (S-2-003); regular attendance is expected. There are two lecture sections:

- "The noontime session": Lecture 01; MWF 12:00 – 12:50 PM
- "The afternoon session": Lecture 02; MWF 3:00 – 3:50 PM

You should attend the session for which you are registered. In an emergency, you may attend the other session. Your iClicker points may not be counted if you attend the wrong session.

Lab Sections: Lab sections meet in ISC-2210, -2300, and -2310. Some labs involve hands-on activities; others involve problem-solving exercises. Lab sections will be assigned before the first week of class; you may not switch sections after that time. Attendance in lab is expected.

In an emergency, you may make up a missed lab by attending another section that meets during the same week with the permission of the TA; TAs may refuse entry to students once the section is full. You may attend only one make up lab section per semester; after that, if you attend a lab other than the one to which you have been assigned, you will be allowed to attend that lab but your pre-lab and any other materials due in that lab will not be graded.

You must read the lab manual before lab. Some labs have pre-lab exercises based on the lab manual; these are due at the start of lab and will not be accepted late. **You will not be admitted to lab unless you have a copy the lab manual and a completed pre-lab with you.**

The lab sections are as follows – all labs meet in the Integrated Sciences Complex (ISC):

<u>Section</u>	<u>Time</u>	<u>Room</u>	<u>Section</u>	<u>Time</u>	<u>Room</u>
1	Tu 9:30 - 12:30	2210	13	We 1:00 - 4:00	2300
2	Tu 9:30 - 12:30	2310	14	We 1:00 - 4:00	2210
3	Tu 9:30 - 12:30	2300	15	We 5:30 - 8:30 PM	2300
4	Tu 2:00 - 5:00	2210	16	We 5:30 - 8:30 PM	2310
5	Tu 2:00 - 5:00	2310	17	Th 9:30 - 12:30	2210
6	Tu 2:00 - 5:00	2300	18	Th 9:30 - 12:30	2300
7	Tu 6:30 - 9:30 PM	2310	19	Th 9:30 - 12:30	2310
8	Tu 6:30 - 9:30 PM	2300	20	Th 2:00 - 5:00	2210
9	We 8:30 - 11:30 AM	2210	21	Th 2:00 - 5:00	2310
10	We 8:30 - 11:30 AM	2300	22	Th 6:30 - 9:30 PM	2310
11	We 8:30 - 11:30 AM	2310	23	Th 6:30 - 9:30 PM	2210
12	We 1:00 - 4:00	2310	24	Th 6:30 - 9:30 PM	2300

### Exams:

- There will be ten 50-minute exams given in class during the semester. There will not be a final exam; however, each exam will contain at least one question that is based on material presented previously in class.
- There will be no make up exams. No conflict exams will be given.
- If you arrive more than 5 minutes late to an exam, but before the first person has finished the exam, you may be given as many minutes as you were late as extra time after the exam. However, if a significant number of students have finished the exam before you arrive, you will not be allowed to take that exam.
- A subset of the students in the noontime session will be asked to take the exam in a nearby location to relieve the crowding in Lipke.
- You may bring a single 8.5 x 11 sheet of paper with whatever you want on written, Xeroxed, printed, etc on both sides of it to each exam.

Exam Re-grades: Occasionally, we make mistakes when grading. If you feel that your exam was graded in error, you can request a re-grade. Instructions and notes for re-grading:

- Re-grades must be in writing; because different TAs graded different questions, neither your TA nor I can re-grade your exam “on the spot”.
- When asking for a re-grade, you should include the following:
  - Your whole exam. Do not mark on it in any way. In order to prevent cheating, we xerox or scan some or all of the exams; any marks made on your exam after it was graded and given to you in lab may be interpreted as cheating. Students who alter their answers and submit these altered answers for a re-grade will receive a grade of “F” for the course and a letter will be sent to the Dean of Undergraduate Education notifying him/her of the incident.
  - A note on a separate piece of paper (attached to your exam) explaining what needs to be re-graded. Don’t simply say, “Re-grade question 3”; you should explain why your answer deserves more credit than we gave. If it is an addition error, explain which numbers were added up incorrectly.
  - Re-grade requests that do not follow these rules will be returned without review.
- Re-grade requests must be turned in to your TA or Brian White within 2 weeks of the date the exam was handed back in lab.
- Re-graded exams will be returned in lab about 2 weeks later.

Grades: Your final grade will be calculated as follows:

- There are 650 points available in the course:
  - 300 points for your 10 hour exams 1-5 (30 points each)
  - 150 points Lab: Your lab grade will be totaled (max = 460) and scaled to a maximum of 150 points (multiplied by 150/460); see breakdown that follows.
  - 150 points SPOC; this will be the “Total” shown on the “Progress” page of the SPOC scaled to 150 points.
  - 50 points iClicker: Your iClicker points will be totaled and scaled to 50 points.
- However, your overall grades are based on a 600-point scale which is approximately:
  - 560-600 = A                      540-559 = A-
  - 520-539 = B+                    500-519 = B                      480-499 = B-
  - 460-479 = C+                    440-459 = C                      420-439 = C-
  - 400-419 = D+                    380-399 = D                      360-379 = D-
  - 0-359 = F
- Thus, you have a 50-point “safety net” for missed assignments, etc.

### Lab Grades

<u>Done at home &amp; handed in at start of lab</u>		<u>Work done entirely in lab</u>	
Pre-labs	12 x 10 pts = 120	Small Molecules Worksheet	20
Chromatography Report	25	Protein Structure Checkoff	20
Protein Structure Report	20	GFP I Checkoff	10
Amylase Report	25	Aipotu I Checkoff	20
Aipotu I Report	25	PTC I Checkoff	10
Arabidopsis Report	20	Giant DNA Checkoff	10
Giant DNA Report	20	GFP II Checkoff	10
GFP Transformation Report	10	Aipotu II Checkoff	20
Aipotu II Report	30	PTC II Checkoff	10
	Total: 295		Total: 130
<u>Work done on-line but not in SPOC</u>			
Meiosis SimUText	35		

Grades will be posted as they become available on Blackboard or the SPOC as appropriate.

### Due dates:

- *7.00x SPOC Assignments* **They are due at 12:00 noon on the date indicated** and will not be accepted late for any reason. There are no make-ups for SPOC assignments. *Do not be confused by the due times that are listed in the SPOC – they are in GMT (Greenwich Mean Time), which is 4-5 hours ahead of our time zone.*
- *Lab reports* are due as indicated in this syllabus or as modified by your TA. In cases where there is a conflict between when the Lab Manual says that a report is due and when the syllabus or TA says so, your TA is the final source; the syllabus is next. In certain cases, and only with the permission of your TA, lab reports may be turned in to the TAs mailbox in the Biology office (W-3-021) by 5:00 PM on the day that they are due. In ALL other cases, late reports will NOT be accepted\* – do not assume that we will grant you an exception. I have very limited flexibility; if you need an exception, it can only be granted if you come to me in advance.

\* Each student will be allowed to turn in one and only one lab report one week late for a maximum of ½ credit. Specifically, if the lab report is turned in between 1 and 7 days late (relative to the student’s assigned lab section meeting time), the student’s lab report will be graded; the score received will be ½ of the grade earned. Each student may do this only once per semester.

⇒ If you have computer problems with your lab report, you have several options for turning it in on time (in each case **you** are responsible for making sure that your TA receives your report):

1. Turn in a partially complete report on time.
2. Bring your report to your TA on disk (only with your TA's permission).
3. E-mail your report to your TA as an attachment (only with your TA's permission). Your TA must be able to open and read the attachment.
4. Fax your report to the Biology office (617 287-6650); attention: your TA (only with your TA's permission).

It is always good practice to keep backup copies of lab reports on other disks to guard against hard drive crashes.

Snow days: If class is cancelled due to snow, check the course Blackboard site for announcements. In general, snow days before exams will not cause the exams to be moved; if a snow day falls on an exam day, the exam may be held in the next class period – check Blackboard to be sure.

Incompletes: Incompletes will only be granted under certain special conditions. To receive an incomplete, you must be doing well in the course and the work to be completed must be a well-defined unit of the course. An incomplete **must** be arranged in advance of your absence at a meeting **in person** with Brian White.

Academic Conduct: Students are required to adhere to the Code of Student Conduct, including requirements for the Academic Honesty Policy, delineated in the University of Massachusetts Boston Graduate Studies Bulletin and relevant program student handbook(s).

[http://www.umb.edu/life\\_on\\_campus/policies/code](http://www.umb.edu/life_on_campus/policies/code) In this course, penalties for academic misconduct, including plagiarism (copying from another student, a book, or the internet), are strictly enforced. It is my policy to make the consequences of being caught cheating on a given exercise much more severe than the consequences of not turning in that particular exercise.

Accommodation for Students with Disabilities: Section 504 and the American with Disabilities Act of 1990 offer guidelines for curriculum modifications and adaptations for students with documented disabilities. If applicable, you may obtain adaptation recommendations from the UMass Boston Ross Center 617-287-7430. You need to present and discuss these recommendations with me within a reasonable period, prior to the end of the Drop/Add period.

If you are using adaptive software with Blackboard Vista, please contact the instructor for information regarding the software's interface with the LMS.

## Succeeding in Bio 111

Past Bio 111 students were surveyed on how to best succeed in this class. 173 students shared the best way to effectively prepare for class and succeed on exams.

### How to **prepare for class:**

- **85%** of students emphasized that **doing the SPOC** essential way to prepare themselves for class and to thrive in the course. Students suggested that **doing the SPOC in advance**, giving yourself enough time to watch the entire lectures, understand concepts, and work on all the questions (including the challenge questions). Students also suggest taking thorough notes on the SPOC videos, in order to come to class prepared and ready to answer questions.
- Students suggest that **organization** is key to being well prepared for class. **20%** of students recommend always bringing the handouts, notes from SPOC, and iClickers to each class. Students suggest **purchasing both required and recommended materials** as soon as possible (including iClicker, textbook, and APAIB book), in order to be well prepared from the beginning of the semester.
- Lastly, **10%** of students suggest that working on the handouts **prior to class** helps students be better prepared and also formulate potential questions in advance.

### How to **prepare for the exams:**

- Students say that **attending lectures** are crucial for succeeding on the exams. Participating in class and **paying attention** is important because the Professor covers material that you will be tested on. Furthermore, **22%** of students say that taking notes during lecture helped them learn the material, and **42%** of students recommend **reviewing both lecture notes and SPOC notes** when studying for the exams.
- **65%** of students insist that after reviewing all the notes, **completing the practice exams** is the best approach to prepare for the actual exams. The most effective way to utilize the practice exams is to do it **without looking at the answers**, and then reviewing what you got wrong.
- Students claim that **cheat sheets** not only helps studying for the exam when creating them, but they **help build confidence**, which reduces anxiety during the exam. **28%** of students agreed that making a cheat sheet for the exam helped them do better. Also, some suggest taking notes of important concepts as you learn them, and utilize these notes to create cheat sheets.
- **25%** of the previous classmates say that reviewing iClicker questions as well as working on the **APAIB questions** helped prepare them for the exams.
- More than **15%** of students suggest that **understanding the questions**, and not memorizing the answers is the best way to succeed. Exam questions are reliant on **applying knowledge**, and not just memorized facts. This requires **practice** and providing yourself enough time to **ask an instructor questions** so that you are well prepared and confident for the exam.
- Finally, **10%** of students recommend going to **tutoring sessions** if you are still struggling to learn concepts after lecture, as well as participating in study groups.

Summary by Larissa DeSouza (former Bio 111 student).