

BIO181

General Biology I: From Atoms to Organisms

Fall 2011: M W F – 12:55-1:45 PM

Welcome!

BIO181 is part of a two-semester General Biology course with BIO182 being the other part. The course will introduce you to the multifaceted, interdisciplinary, exponentially-expanding and constantly-evolving field of human inquiry known as Life Science. Beyond its self-evident relevance to human well-being, environmental health and sustainable economy, biology is intellectually stimulating, sensually rewarding, beautiful and fun. We will introduce you to some of the many avenues of biological research, some of the field's conceptual fabric, the major implements in its tool-box, and some of the current state of biological knowledge. By touching on prevailing theories and outstanding controversies, we would like to infect you with our love to this field, and with the excitement of being a life scientist at the beginning of the 21st century, the "Age of Biology".

As shown in your textbook's Figure 1.6 (Sadava et al, 2009, p 8), biology has been traditionally studied within disciplines reflecting the hierarchical nature of biological organization itself – biochemistry, molecular biology, cellular biology, anatomy and physiology, population biology, ecology etc. While the barriers between disciplines have already begun to dissolve – modern biology is interdisciplinary, they do lend themselves to form a convenient framework for the course. Therefore, even though it is not required to take BIO181 and BIO182 in this order, the two parts of the course do constitute a logical sequence that mimics the increasing complexity of biological organization. BIO181 takes you from atoms and molecules, through cells to the whole organism. BIO182 will deal with organismal diversity and the evolutionary processes responsible for it and to the relationships within populations and communities of organisms and between organisms and their environment.

In the first part of BIO181, we'll introduce you to the chemical basis of life and we'll cover key aspects of molecular cell biology. In BIO181's second part, we'll describe how multicellular organisms integrate cells into tissues and organs to manage the flow of energy and material and successfully function in the environment. We will present these concepts in the context of modern's biology recurring theme – evolution. The companion laboratory of BIO181 is an integral part of the course stemming from our conviction that biology, like all other sciences, depends on observations leading to formulation of hypotheses that are then tested for their validity in the lab or in the field.

Course Objectives:

1. To acquaint the student with the scientific method and practice critical thinking.
2. To review the chemical and physical principles at the basis of modern biology
3. To introduce the basic concepts of molecular, cell, and organismal biology
4. To familiarize the student with common research techniques used by molecular, cell, and organismal biologists
5. To enable the student to be conversant in the terminology of molecular, cell, and organismal biology

Expected Outcomes:

By the end of the course the student will be able to

1. identify the steps of the scientific method in studies that led to seminal biological discoveries and apply the scientific method and critical thinking to biological questions especially interpretation of experimental results and formulation of new hypotheses;
2. relate key chemical principles to important biological phenomena including macromolecular structure and function, metabolism and enzymatic catalysis;
3. compare prokaryotes and eukaryotes for their cellular architectures and processes, identify cellular organelles and define their functions;
4. outline the flow of genetic information from DNA, through RNA to protein and describe major elements of gene regulation;
5. explain the similarities and differences in major metabolic pathways of autotrophs and heterotrophs;
6. explain the structural and functional characteristics of major tissues, organs and systems of vertebrates;
7. explain how organ systems are regulated to maintain cellular and organismal homeostasis
8. explain major techniques used in molecular, cell and organismal biology research and relate their application to biological questions.

Instructors

Dr. Tsafir Mor and Dr. Devin Jindrich

Dr. Mor is a biochemist and molecular biologist. Main topics of research in his lab involve the engineering of plants for the production of useful protein pharmaceuticals to be used for example as vaccines against infectious diseases. Please visit his website at <http://labs.biodesign.asu.edu/mor/>

Dr. Jindrich's training is in comparative physiology with an emphasis on biomechanics and motor control. Main research topics include understanding the motor control of locomotion stability and maneuverability, prevention of workplace injuries, and restoration of function following neuromotor injury. Please visit his website at <http://www.limblab.org/>

Contact Information:

	Office	Phone	email	Office hours	Virtual Office hours
Dr. Devin Jindrich	PEBW 126E	727-7382	devin.jindrich@asu.edu	Th, F 11A-12P	TBD
Dr. Tsafir Mor	LSE 309	727-7405	tsafir.mor@asu.edu	M, W 2-3 PM	T, 9-10 PM Th, F 2-3
Lecture TA: TBA					
Lab Coordinator: Manoush Farzin	LSE S37	965-6443	manoush.farzin@asu.edu	by appointment	by appointment

BIO 181 on Blackboard:

Our main mode of communication with you outside the class will be through BlackBoard. This is an essential and mandatory resource for this course so get familiar with it as soon as possible. Access to the course on Blackboard is via myASU:

<https://myasucourses.asu.edu/>.

If you are enrolled in the course, you should automatically be enrolled in BIO 181 for Fall 2011. If you are enrolled but do not see BIO 181 on MyASU, see the lecture TA, ASAP.

We will post all the course materials on Blackboard. These materials will include all major announcements, the course syllabus, lecture schedule, lecture outlines, lecture slides, the lab manual, weekly homework assignments and quizzes, some of the Midterm exams, links to external websites and internet resources, and of course your scores and grades. These will be uploaded to the Grade Center in Blackboard. The Grade Center is an easy and convenient way

to keep tab of your scores, but it will not be used for calculating final grades, which we will do offline.

Email is an important mode of communication. On occasions messages will be sent to you on your ASU accounts. We will ONLY use your ASU email addresses. It is your responsibility to make sure your mailbox is emptied regularly so important messages will not bounce back. If you are using other email addresses, it is also your responsibility to divert mail to it from your ASU address.

Contacting your instructors:

- ☺ The most beneficial kind of interaction with your instructors is by visiting us during office hours. If you cannot make office hours, call or email, and we will arrange an appointment. It would be best to attend office hours and direct questions to Dr. Mor during the first half of the semester and to Dr. Jindrich during the second half of the semester.
- ☺ Email is an important mode of communication and we will use it often. However, there are almost 450 of you and only two of us and if only 5% of you will send us one message every day and we will need only 6 min to read and respond to every message, we will spend an additional 2 work days a week only answering emails from BIO181 students. It is our experience that most questions are of administrative nature (e.g. “When is the deadline for HW07?”, “What is the assigned reading for tomorrow?”) and most if not all could have found an answer much faster by turning to other resources available to you such as this syllabus, BlackBoard Announcement page, another student or a TA. When sending us questions of this nature by email, please document three such resources you consulted with before turning to us.
- ☺ To ensure a timely response you must include on any emails to the instructors or TAs, the following identifier in your subject line: 2011Fall-T-BIO181. Best is to email us from within Blackboard. Failing to include the identifier may result in your message being drowned by the deluge of emails in our inbox, or worse being filtered out as SPAM.

Your messages will be attended to during our “Virtual Office Hours”. Please expect that it may take up to 24 hours for us to receive and respond to your e-mail during weekdays and longer on weekends.

Required course materials:

📖 **Textbook:** Sadava DE, Hillis DM, Heller HC, and Berenbaum MR. 2011. *Life: the science of biology*, Ed 9th. (Sinauer Associates and WH Freeman & Co., Sunderland, MA and Gordonsville, VA). Available at ASU bookstore.

- 📖 Turning Point clicker. Available at ASU bookstore.
- 📖 BIO 181 Laboratory Manual. Available at ASU bookstore.
- 📖 Please see additional required items in the BIO 181 laboratory syllabus.

Grade Breakdown

Grading: Overall score for the course will be comprised of a weighted average of your scores of the lecture and lab parts (75% and 25%, respectively). Breakdown of the lecture score is shown in the table below. Please note that some of your HW assignments and exams will allow you to earn more than 100% (“bonus” points).

Lecture		% of lecture	% of course
	3 Midterm Exams	45%	33.75%
	Final Exam	25%	18.75%
	12 Homework Assignments	20%	15.00%
	Participation (clickers)	10%	7.50%
Total Lecture (75% of final grade)		100%	75%
Laboratory		% of lab	% of course
	To obtain your lab score, calculate the percentage of points out of 250 (e.g. 220/250 *100 = 88%)		
	For breakdown see lab's syllabus		
	250/250	100%	25.00%
Total Lab (25% of final grade)		100%	25%
Course			% of Course
	Lecture		75.00%
	Lab		25.00%
Total score for BIO 181			100%

Some of you are more comfortable thinking about your grade as an accumulating pile of points. They can consult the table below. We do not plan to “curve” the grades. We reserve the right to change these grade cut-offs, and to use +/- to help your grade, but we will not raise the grade

A	≥	90%
90%	>	B ≥ 80%
80%	>	C ≥ 70%
70%	>	D ≥ 60%
60%	>	E

cut-offs.

Exam Policies:

- 🧠 Exams will focus primarily on concepts and material covered in lecture, although there may be several questions from the assigned readings that are not discussed in class (you will be informed of these topics). Each topic in the course builds on previously covered topics, so while each Midterm exam will directly cover materials taught since the previous Midterm, expect “older” material to permeate the questions. The Final will be 40% comprehensive.
- 🧠 **THERE WILL BE NO MAKE-UP EXAMS.** If you miss an exam without an excuse, you will receive a zero for that exam. The only valid excuses are medical emergencies or catastrophes. These emergencies must be documented with a doctor's note, police report, etc., so visits to see mom or romantic break-ups won't qualify. If you have a problem, please see, phone or email (in that order of preference) your instructor or the lecture TA no later than 5:00 pm on exam day and preferably before the exam. It is up to the instructor to decide if the missed exam was due to a legitimate emergency.
- 🧠 If absence from a Midterm exam was excused, your score for that exam will be the average score you receive on the other lecture exams. If you miss the Final Exam due to a documented emergency, and have a passing grade, you may be eligible to receive a grade of Incomplete (I).
- 🧠 If you arrive at any exam after even one person has finished the exam you cannot begin the exam, and you have officially missed the exam.
- 🧠 If you know of a scheduling conflict ahead of time, it would be in your best interest to talk to your instructor about it as soon as possible. It MAY be possible to arrange to take the exam early.
- 🧠 You must bring your student ID to exams.
- 🧠 All cell phones and electronic devices must be turned off and out of sight during exams. If a student is spotted with a cell phone out during an exam, the student will receive an immediate grade of zero for the exam, and probably further disciplinary action.
- 🧠 Each of the Midterm exams is worth 15% of the total lecture's score.
- 🧠 The Final exam is worth 25% of the total lecture's score

Homework assignments/quizzes

There will be twelve HW assignments/quizzes You will take the HW/quizzes online via Blackboard. The HW/quiz will be posted at least one day prior to the due date. **HW/Quizzes will become unavailable at 12:30 pm on the date indicated in the lecture schedule or announced in lecture.** HW/quiz questions give you a chance to practice what you learn in

class and will test your understanding of recent lectures *and your preparation for the upcoming lecture*.

- 💡 You may take each HW/quiz only once, and there will be NO make-up HW/quizzes or second chances to take HW/quizzes once they become unavailable at 12:30 on assigned HW/quiz day because we are likely to go over HW/quiz questions in class.
- 💡 Take the HW/quizzes seriously because they will help you learn the material, and become familiar with the types of questions we may ask on exams (hint).
- 💡 Your two lowest HW/quiz scores will be dropped.
- 💡 HW/quiz scores will be weighted as 2% of the total Lecture grade (altogether 20%).

Classroom participation points:

We will use the TurningPoint clicker system to increase student participation and to provide feedback about how well students are doing with new concepts.

- 🔗 You will need to purchase a Turning Point response unit at the ASU Bookstore. Directions for registering and using your TurningPoint clicker can be found at http://help.asu.edu/Student_FAQS_TurningPoint. More information on the use of TurningPoint will be provided in class.
- 🔗 Starting Fri, Aug. 26, points will be associated with participation, so make sure you finish the clicker registration process before that date.
- 🔗 Correct answer to a clicker question will award you 1 point; incorrect answer will still give you 0.5 point. There will be about ~3 clicker questions, or 3 points, per period (in the end of the course we will normalize all those periods in which there were more than 3 or less than 2 to 3 points). You can accumulate up to 75 clicker points for the entire semester. Since there will be at least 30 lectures with clicker points so we offer you more points that you can accumulate to account for the odd day in which you forgot to bring the clicker to class, it malfunctioned or radiation from a Goa'uld Ha'tak interfered with signal transmission. But don't make a habit of forgetting your clicker and keep your interactions with system lords to a minimum. Since we will go over the correct answers to TurningPoint questions, we will not accept clicker answers at the end of class. Because we allow a substantial slack (20%), you may still get the full credit for this portion of your grade even if you forget your clicker or it malfunctions on occasion (just don't make it a habit!), so please do not ask for points if you forget to bring your clicker to class.
- 🔗 Please address all questions about TurningPoint to the lecture TA. If you ask the instructor about TurningPoint, you may lose points.

Attendance:

Many years of teaching experience at ASU have made it clear that students who attend class and pay attention learn more and receive better grades. Therefore, consider attendance in lecture to be required. Apart from losing classroom participation points, there is no explicit penalty for missing lecture, but there will be a lot of material presented in lecture that is not in the textbook; the exams will be heavily weighed towards material that we discuss in lecture. If you miss a lecture, arrive late, or leave early, YOU (and you alone!!) are still responsible for information and announcements that you missed.

University Withdrawal and Incomplete Policies:

The unrestricted withdrawal deadline is November 2 2011. University and course policy is that after those dates, withdrawals (and a grade of W) will be given only to students with documented medical problems or personal issues warranting a compassionate withdrawal. If you fail the first midterm exam, you should dramatically alter your study methods or else drop the class. A grade of Incomplete (I) will be given **only** when a student has a passing grade, but cannot complete the final exam due to health problems or other emergency. We will not assign a grade of "I" if you are missing more than one lecture exam and one lab exam or lab report, or if you are not passing the course. Incompletes must be completed within a year.

Disabilities:

We will work with you and the Disabilities Resources Center to accommodate students with disabilities, including learning disabilities. Please see the instructor before the end of the 2nd day of class so that we can arrange appropriate accommodation.

Classroom Behavior:

We expect you to behave in a way that is respectful of your fellow students, your instructors, lab coordinator and your TAs. You are encouraged to participate actively in class by asking questions and joining in discussions. Exams will probably include questions that students ask during lecture. Please keep in mind that this is a large class so some discussion topics may be more appropriate for office hours.

🔔 You are expected to **arrive to lecture on time and stay for the entire lecture!** OK, is that clear enough? If you are late arriving, please enter through the back door. If you know you have to leave lecture early for something like a doctor's appointment, please sit close to the aisle near a rear exit, and close the door silently behind you.

🔔 **All electronic communication devices other than TurningPoint clickers should be off during lecture (and lab sessions).** If you must receive emergency phone calls for any

reason, use a vibration alert; leave the class to take the call. After the call, please return to a seat in the back of the classroom. If you TEXT in class, you may be asked to leave the class.

- 💡 Laptop computers are welcome in class for taking notes. If you are on Facebook or using applications unrelated to lecture, you may be asked to leave the class.
- 💡 Only one conversation in class at a time, please, unless you are asked to discuss specified questions with your neighbor by the instructor.
- 💡 You may record lectures only with the explicit consent of the instructor.

Laboratory expectations:

- 👤 Your lab TA will provide you with a syllabus explaining policies, procedures, grading, and the schedule for the laboratory portion of the course.
- 👤 Know ahead of time that lab attendance is essential and that attendance will be taken in lab. **There are no make-up labs.** Students missing 3 labs, whether excused or not, will receive an E grade for the course.
- 👤 Your questions regarding lab should be first directed to your TA, 2nd to the course coordinator, and failing resolution at those levels, may then be brought to your instructor's attention.

Grade Ethics:

Telling your instructors about the consequences of your grade (loss of scholarships, residency status, etc.) is unprofessional and unethical. You, and you alone, are responsible for your grade. Do not ask for special treatment or special dispensation. Your past academic performance is irrelevant to your performance in this course and it is inappropriate to bring it up in discussions of your performance in BIO 181 ("I'm a straight A student... and I have a C in your course", "Your class is going to ruin my 4.0", etc.). Play by the rules and exercise self-respect by abstaining from petty begging or attempting to prey on the sympathy of others.

ASU and BIO 181 Policy on Academic Dishonesty:

- X_e In the Student Academic Integrity Policy manual, ASU defines Plagiarism [as], “using another's words, ideas, materials or work without properly acknowledging and documenting the source. Students are responsible for knowing the rules governing the use of another's work or materials and for acknowledging and documenting the source appropriately.”
- X_e You can find lots of information about academic integrity at: http://provost.asu.edu/academicintegrity/students#avoid_policy_violations. Academic dishonesty, including plagiarism and inappropriate collaboration (like cheating on an exam or HW/quiz), will not be tolerated. There are severe sanctions for cheating, plagiarizing and any other form of dishonesty.
- X_e All work presented in this class must be your own, unless collaboration is specifically and explicitly permitted.
- X_e Working on a TurningPoint question with a neighbor is generally OK. However, if we find another student bringing your clicker to class, that will be treated as cheating, and both of you will lose all class participation points for the semester.
- X_e **If a student is found to be cheating on an Exam or Quiz, the minimum penalty will be to FAIL THE ENTIRE COURSE, and most likely a grade of XE (failure due to academic dishonesty).** In serious cases, your instructors can (and have in the past) request that you be expelled from the university.
- X_e **By enrolling in this course, you explicitly pledge on your honor that you will not give or receive any unapproved assistance on any quiz, exam or assignment.**
- X_e All contents of our course materials, including lectures, exercises, exams, etc. are under copyright protection. You may NOT distribute, post, sell, or buy any notes, exercises, quizzes or exams without our written permission.
- X_e **If you are thinking about cheating, be aware that this is a decision that can negatively affect the course of the rest of your life! Don't do it.**

Studying for this class.

- 📖 **Study Habits and Study Skills** can be learned, but take practice to implement and master. It is easy to “talk the talk”, much tougher to “walk the walk”.
- 📖 We, your Instructors are your most important resource in this class. Make use of us.
- 📖 According to a common misconception, biology is a “soft” science (i.e. “sit back, relax and enjoy the nature show”) as compared to “real”, “hard core” sciences such as physics and chemistry and mathematics. Nothing can be further from the truth. Like all other science branches, biology is anchored in math, built on chemical and physical foundations and rigorously adheres to the “scientific method” in all of its explorations. It is not less quantitative or mechanistic or rigorous than any other branch of science. Therefore, both math and chemistry permeate the course at all levels and you will need pretty good chemistry and math backgrounds (competency at the high school level of chemistry and algebra). Therefore, you may want to review last semester’s notes (or even those old high school notebooks of yours!) to reap the most benefits from this class, gaining knowledge-wise and having fun-wise.
- 📖 Regardless of your background, the class is going to be challenging to many of you. In the last few decades, the life sciences have been the most dynamic of all sciences and the trend is likely to continue. Biology’s state of the art is in a rapid state of flux. While many of the basic concepts and theories have prevailed through constant scientific scrutiny, as new information becomes available, new insights are gained, and new hypotheses are formulated that better encompass the available information. This explains why all of us who study biology should prefer using “current state of knowledge” over “facts” or “truths”. What we hold today as fact-based truth may very well be falsified tomorrow by new, more-accurately measured results. Rather than limiting you to rote memorization of factual details of such ephemeral nature, we will emphasize basic concepts, the processes of knowledge acquisition and interpretation and the integration of knowledge.
- 📖 So if you are used to studying for classes by memorizing definitions and facts, be warned that you will have to **THINK** and use concepts in this class. Our primary objectives are to help you develop an enduring appreciation of basic biology and help you to develop quantitative, mechanistic and/or critical reasoning skills. These are acquired skills that can be honed through practice and perseverance; they are essential for success in more advanced courses in many disciplines.
- 📖 This is a rigorous 4 credit-hour course and you should expect to spend at least 12 hours/week outside the classroom on course work including reading assigned material, take-home quizzes, writing reports, discussions with your peers etc. Some students may

need more time than that, others need less. Put the time in and you will probably succeed. Try to “wing it” and chances are you will fail.

📖 ***Time management is probably the hardest skill to master.*** Introductory (“survey”) science courses are unforgiving when it comes to procrastination and last minute cramming. You will not succeed in this class unless you schedule your study time and stick to your schedule.

📖 The required textbook for this course is Savada, Hillis, Heller and Berenbaum’s Life, 9th Ed. You will need to read the text differently than you would non-scientific books.

📖 There is a very helpful, free web site to accompany the book at www.thelifewire.com. This site (from Sinauer Associates and W.H Freeman) has a wealth of study aids, including self-quizzing to help you practice for exams, animations, flashcards, activities, study ideas, help with math and statistics, and more.

📖 Did we already mention that your instructors are your most important resource in this class? We mean it. Make use of us.

📖 ABC Tips for success in BIO181:

- **ATTEND CLASS.** Experience shows that students who attend class regularly do better in the exams and have a better class grade.
- **BE PREPARED.** Read the assigned material BEFORE coming to class, go over your notes from the previous lecture and prepare questions to ask during class or during office hours.
- **CLEAR NOTE-TAKING.** We all use shorthand, copy down pictures and doodle while trying to keep up with the lecturer. Fat chance you will remember the night before the exam what you meant three weeks ago by the circle and the arrow. It is recommend that you copy your class notes over (typing them into your computer for example), preferably the same night of the lecture.
- **DON'T BE SHY.** There’s a very old Hebrew proverb that says that the shy can’t learn and the strict can’t teach. If something is unclear to you during class or when you read your textbook and review your notes, ask!
- **EXAMS** don’t come unannounced. Don’t leave all the studying to the wee hours of the night before.
- **FRIENDS** and **PEERS** are a great resource. Use this resource wisely and don’t abuse it. Discuss hard topics with friends, debate possible answers to difficult questions, listen to others and express yourself. Study groups are one of the most effective means of learning

life sciences. But, do all the homework assignments and any other class work by yourself. You will not learn by copying.

- **GUESS**, when all else fails use your instinctive intellect (otherwise known as your gut), often you only think you don't know the answer.
- **HEALTHY** college life. While the college years really come only once, you want to make sure this is the case and that you don't have to repeat any of your classes again. Remember that you are here because you want to be here and because you want to learn. Eat well, sleep well, exercise, and exercise moderation in your extracurricular activities.
- **INSTRUCTORS**. It's up to you to be successful, but we are here to facilitate your navigation through this course. If you have difficulties, see us so we can help you. We have a great track record helping students to learn and improve exam scores.

The course syllabus is a contract between students and instructors. We will do our best to uphold our end of the deal, and we expect you to behave in a mature, responsible and ethical fashion as outlined in this document. If you do not accept the rules for conduct in the class, please drop the class now.

Week	Monday	Tu	Wednesday	Th	Friday	Sa	Su
	8/8	8/9	8/10	8/11	8/12	8/13	8/14
1	8/15	8/16	8/17	8/18	8/19 1 Introduction I Ch 1	8/20	8/21
2	8/22 2 Introduction II Chemistry of Life I: Atoms and Molecules Ch 2	8/23	8/24 3 Chemistry of Life II: covalent bonds, ionic interactions Ch 2	8/25	8/26 4 Chemistry of Life III: hydrogen bonds, hydrophobic effect, van der Waals interactions The Clicker - it's alive! Ch 2	8/27	8/28
3	8/29 5 Chemistry of Life IV: Water, acid/base, pH Ch 2	8/30	8/31 6 Chemistry of Life V: Sweet and Sour: sugars and nucleic acids Ch , 3.1, 3.3, 4.1	9/1	9/2 7 Nucleic acids. Proteins I HW 01 due Ch 4.1, Ch.3.2	9/3	9/4
4	9/5 Labor Day	9/6	9/7 8 Proteins II Ch 3.2	9/8	9/9 9 Poroteins III HW 02 due Ch. 3.4, 6	9/10	9/11
5	9/12 10 Lipids, phospholipids. Membranes Ch 6	9/13	9/14 11 Membranes: transport Ch 6	9/15 HW 03 due	9/16 Review Session Exam I: Fr 3PM- Mo 11:59 AM Ch 1, 2, 3, 4.1,6	9/17	9/18
6	9/19 12 Cells and cellular ogranelles Ch 5	9/20	9/21 13 Cells and cellular ogranelles Ch 5	9/22	9/23 14 DNA I: from nucleotids to chromosomes. Replication HW 04 due Ch 13.1-4	9/24	9/25
7	9/26 15 DNAII: Replication (cont), Recombinant DNA. Ch 13.5, 15.2, 17.1	9/27	9/28 16 RNA: Transcription and processing Ch 14.1-4	9/29	9/30 17 Proteins: The genetic code and translation HW 05 due Ch 14.5-6	10/1	10/2
8	10/3 18 Regulation of Gene Expression I: Prokaryotes Ch 16.1-2	10/4	10/5 19 Regulation of Gene Expression II: Eukaryotes Ch 16.3-5	10/6	10/7 20 Regulation of Gene Expression III: Signal transduction HW 06 due Ch 7.2-4	10/8	10/9
9	10/10 21 Going full circle: The cell cycle Ch 11	10/11	10/12 22 Recombinant DNA II: From Molecular Biology to transgenic organisms CH 18	10/13 HW 07 due	10/14 Review Session Exam II Fr 3PM- Mo 11:59 AM CH 5, 7.2-4, 11,13-17.1, 18	10/15	10/16

Week	Monday	Tu	Wednesday	Th	Friday	Sa	Su
9	10/17 24 INTRO TO 2nd HALF: Learning	10/18	10/19 25 INTRO TO 2nd HALF: Homeostasis and Gradients CH 40, 8	10/20	10/21 26 INTRO TO 2nd HALF: Homeostasis and Gradients CH 8, 40	10/22	10/23
10	10/24 27 INTRO TO 2nd HALF: Energy and Regulation Ch. 52, pp.115-118	10/25	10/26 28 TEMPERATURE I Ch. 52	10/27	10/28 29 TEMPERATURE II HW 7 due Ch. 52	10/29	10/30
11	10/31 30 OSMOREGULATION I pp.115-118, CH 52	11/1	11/2 31 OSMOREGULATION II Ch. 52	11/3	11/4 32 GAS EXCHANGE I HW 8 due Ch. 49	11/5	11/6
12	11/7 33 EXAM III Ch. 8,40,49,52	11/8	11/9 34 GAS EXCHANGE AND CIRCULATION Ch. 49, 50	11/10	11/11 Veterans Day	11/12	11/13
13	11/14 35 CIRCULATION II HW 9 due Ch. 50	11/15	11/16 36 PHOTOSYNTHESIS Ch. 10	11/17	11/18 37 ENERGY AND METABOLISM I HW 10 due Ch. 9	11/19	11/20

Week	Monday	Tu	Wednesday	Th	Friday	Sa	Su
14	11/21 38 E&M II Ch. 9	11/22	11/23 39 ENDOCRINE Ch. 41	11/24 Thanks giving	11/25	11/26	11/27
15	11/28 40 NEURONS I Ch. 45	11/29	11/30 41 NEURONS II Ch. 45	12/1	12/2 42 MUSCULOSKELETAL HW 11 due Ch. 48	12/3	12/4
16	12/5 43 NEUROMUSCULAR Ch. 48	12/6	12/7 READING DAY	12/8	12/9 FINAL EXAM 9:50-11:40 AM HW 12 due	12/10	12/11
	12/12	12/13	12/14	12/15	12/16	12/17	12/18
	12/19	12/20	12/21	12/22	12/23	12/24	12/25