

Instructor Addresses:

R. Meicenheimer	office: 358 Pearson Hall	email: meicenrd@muohio.edu
Botany	phone: 529-7012	hours: MW 9-11 am
M. Balish	office: 80 Pearson Hall	email: balishmf@muohio.edu
Microbiology	phone: 529-0167	hours: Thurs. & Fri 1:30-3 pm
B. Steinly	office: 108 Pearson Hall	email: steinlba@muohio.edu
Zoology	phone: 529-5732	hours: MW 12-1 pm, T 11-11:45 am

Lecture Schedule:

Date	Topic	Campbell <i>et al.</i>	Morris- Hooke
Week 1	-----		
1-8	Methods and Concepts in Biology	ZOO	Ch. 1
	I. Biological organization is based on fundamental laws of chemistry.		
	Chemical Context of Life	ZOO	Ch. 2,3
	Carbon compounds in cells	ZOO	Ch. 4,5
	NO LAB		
Week 2	-----		
1-15	No Class: Martin Luther King Day		
	Enzymes	ZOO	Ch. 8, p. 150-157
1-17	II. Cells are the basic unit of life.		
	Cell Structure and Function – An overview	ZOO	Ch. 6
	<i>Lab 1. Evaluating Information on Genetically Engineered Crops</i>		
Week 3	-----		
1-22	Membrane Structure and Function	ZOO	Ch. 7
	III. The structure of genes and the way genetic information is encoded are fundamentally the same in all living organisms.		
	The Prokaryotic and Eukaryotic Conditions	MBI	Ch. 2
	DNA and the Gene	MBI	pp. 293-298; 359-364
	<i>Lab 2. Cell Structure - Microscopy</i>		
Week 4	-----		
1-29	DNA Replication	MBI	pp. 299-307; 374-381
	Transcription: DNA Encodes RNA	MBI	pp. 309-19; 352-6; 364-9
	Translation: RNA Encodes Protein	MBI	pp. 320-331; 369-370
	<i>Lab 3. DNA Fingerprinting</i>		
Week 5	-----		
	IV. Living Things utilize energy to maintain internal order and organization.		
2-5	Introduction to Metabolism	BOT	Ch. 8
	Photosynthesis Light Reaction	BOT	Ch. 10 p.181-193
	Photosynthesis Carbon Fixation	BOT	Ch. 10 p. 193-200
	<i>Lab 4: Photosynthesis</i>		
Week 13	-----		
2-12	Aerobic Respiration	ZOO	Ch. 9
	Aerobic Respiration (continued)	ZOO	Ch. 9
2-16	First Lecture Exam: through photosynthesis		
	<i>Lab 5: Microbial Metabolism</i>		

Week 7 -----			
2-19	No Class: Mon.-Tues. Switch Day – President’s Day		
2-21	Aerobic Respiration (continued)	ZOO	Ch. 9
	V. Organisms adapt to their environment through physiological mechanisms.		
	Bacterial Classification	MBI	Ch. 4, 5
	Bacterial Attachment and Movement	MBI	Ch. 6 & 7
	<i>Lab 6: Microbial Growth & Normal Flora.</i>		
Week 8 -----			
2-26	Bacterial Cell Growth and Development	MBI	Ch. 3
	Bacterial Virulence	MBI	Ch. 8
	Plant Cells and Simple Tissues	BOT	Ch. 6, p. 102-120
	<i>Lab 7. Midterm Lab Exam and Plant seed for Lab 9.</i>		Ch. 35, p. 717-719
Week 9 -----			
3-5	Plant Body (root/stem/leaf)	BOT	Ch. 38, p. 778-80, Ch.
	35, p. 712-716		
	Primary and Secondary Plant Growth	BOT	Ch. 35, p. 720-737
	Plant Mineral Nutrition and Transport	BOT	Ch. 36, 37
	<i>Lab 8: Plant Cells and Simple Tissues</i>		
Spring Break -----			
3-12	No Class: Spring Break (3-11 through 3-18)		
Week 10 -----			
3-19	Plant Reproduction (sexual and asexual)	BOT	Ch. 38
	Plant Hormones	BOT	Ch. 39, p. 788-801
	Plant Responses to the Environment	BOT	Ch. 39, p. 801-817
	<i>Lab 9: The Plant Body: Stems, Leaves and Roots</i>		
Week 11 -----			
3-26	Homeostasis	ZOO	Ch. 40 p. 831-841
3-28	Information Flow and the Neuron	ZOO	Ch. 48
3-30	Second Exam: aerobic respiration through plant responses to the environment.		
	<i>Lab 10: Homeostasis</i>		
Week 12 -----			
4-2	Integration and Control: Nervous System	ZOO	Ch. 48
	Integration and Control: Endocrine System	ZOO	Ch. 45
	Endocrine System	ZOO	Ch. 45
	<i>Lab 11: Vertebrate Anatomy</i>		
Week 13 -----			
4-9	Sensory Reception	ZOO	Ch. 49, p. 1045-1057
	Sensory Reception	ZOO	Ch. 49, p. 1057-1066
	Muscle Contraction	ZOO	Ch. 49, p. 1066-1074
	<i>Lab 12: Cardiovascular Anatomy and Physiology</i>		
Week 14 -----			
4-16	Circulatory System	ZOO	Ch. 42, p. 867-883
	Circulatory System	ZOO	Ch. 42
	Respiration	ZOO	Ch. 42, p. 884-895
	<i>Lab 13: Animal Reproduction and Development</i>		
Week 15 -----			
4-23	Respiration	ZOO	Ch. 42
	VI. Living organisms reproduce and develop through an ordered sequence of steps.		
	Principles of Reproduction	ZOO	Ch. 46
	Development	ZOO	Ch. 47
	<i>Lab 14: Final Lab Exam</i>		

Finals Week

- 5-3 **Final Exam:** - covers Homeostasis through Development, plus synthesis of material from the entire course.

Textbooks:

The primary text is *Biology* (7th edition) by Neil A. Campbell, Jane B. Reece and Lawrence G. Mitchell, which should be shrink-wrapped with a CD-ROM to accompany *Biology*. You will need to purchase *Basic Microbiology for Biological Concepts* by Anne Morris-Hooke and *Laboratory Experiences for Biological Concepts* by DeVille, Morris-Hooke, Solomon and Wilson, both available at the Shriver Center bookstore.

Grading System:

The course grade will be based on the combined scores from two hourly lecture exams (150 points each, total 300), lecture assignments and unscheduled quizzes (150 points total), laboratory grade (300 points), and the final examination (250 points), for a total of 1000 points. Note that the laboratory accounts for 30% of the final grade, and will consist of 50 points for the mid-term exam, 50 points for the final lab exam, and 105 points for the lab reports. Finally, you must pass the laboratory section (with at least 180 points) in order to pass the course.

Examination Schedule:

- Examination 1:** Friday, February 16, 2007 (through photosynthesis, 14 lectures)
Examination 2: Friday, March 30, 2007 (aerobic respiration through plant responses to environment, 14 lectures)
Final Exam: Thursday, May 3, 2006 at 7:45 pm
 (over last 13 lectures **PLUS** synthesis of the rest of the course)

NOTE: NO early final exams will be given! This is a University policy; please do not ask.

Exams and Written Assignments:

The exams will be a mixture of various types of multiple-choice questions. More information will be provided before the first exam. In addition, there may be unannounced “pop” quizzes given between each of the lecture examinations. Quizzes will consist of short-answer essay and/or objective questions. There will be some additional assignments made from time to time in lecture. These will be announced by your instructors and may involve some additional readings and/or short written assignments. All lecture assignments (paper copy) are due at the beginning of the next lecture session. The University grading scale will be followed. **NO make-up exams** will be given unless the student has a valid excuse for the absence.

Attendance:

“Every student is expected to attend every class session for which the student is duly registered” (Student Handbook, sec. 701). **Students** are responsible for attendance at lectures during which a quiz or written assignment may be given. Oversleeping or studying for other classes are **not** acceptable excuses for missing class, a quiz or an examination.

Academic Dishonesty:

Academic dishonesty will **not be tolerated**. See the statements in the Student Handbook concerning academic dishonesty. As stated in the student handbook, students are expected to behave honestly in their learning because any form of cheating undermines the value of a Miami education for everyone. You are responsible for knowing Miami University's policy concerning academic dishonesty. Penalties will be enforced in accordance with the regulations as stated in the student handbook and range from grade reduction to suspension, dismissal or expulsion from the university. A lack of familiarity with Miami's policy or misunderstanding of what is considered appropriated and honest conduct will not be accepted as an excuse.

In particular, cheating on exams or on any written work will not be tolerated. Any written work that is handed in with your name on it must be your own original work. Plagiarism, submitting work purported to be your own where the ideas or wording are from another person or source (*e.g.*, another book or someone's reports or the World Wide Web), will not be tolerated. The minimum penalty for a first offense will be a zero in that portion of the course, in accordance with Miami's policy (see Student Handbook). While it is fine to discuss things with your lab mates, you should go into another room and compose and write your assignments or lab reports by yourself. If you and another student hand in work that is virtually identical (*i.e.*, contains identical or almost identical sentences or has all the same ideas expressed in the same order), that is not original work and handing it in with your name on it is dishonest and against Miami's policy. Moreover, if another student allows you to use his or her work, that student will also be guilty of academic dishonesty. Again, saying that you did not understand the definition of plagiarism or Miami University's policy on academic honesty is no excuse.

During an examination, cell phones cannot be used, answered, or within sight. Shut the phone off and either put cell phone in a coat pocket or book bag or do not bring the phone to the lab or lecture examination. If a cell phone is utilized in any manner during a lab or lecture examination, the examination will be collected immediately and examination result will be recorded as a ZERO. Also, all cell phones should be off during lecture and lab.

Laboratory:

NOTE: The laboratory IS MANDATORY!

It is impossible to cover every topic mentioned in lecture in the laboratory. The best we can hope to do is to illustrate some of the main concepts, and to provide you with first-hand experience with manipulation of laboratory materials and equipment. We try to use and have available, live organisms whenever possible, but this is subject to availability from various suppliers, and will vary from year to year.

You **must** attend your assigned laboratory section. Attendance will be taken in laboratory sections during the first five minutes of the class and each unexcused absence will result in a 5-point reduction from the cumulative score. We expect that you will be on time for lab sections; excessive tardiness will result in being marked absent. Credit for make-up labs will **only** be given to those with a written medical excuse (on physicians letterhead stationary) or a family emergency such as a death of a family member (letter from a parent with their phone number required) and the excuse **must** be turned into Dr. Steinly within **two weeks** of your absence for you to get credit. If you are unable to attend lab on a particular week, you **must** contact Dr. Steinly **immediately** (before the scheduled laboratory) to schedule a make-up lab. Labs **must** be made-up during the week that they are scheduled. It is **your responsibility** to make sure that you contact and meet with Dr. Steinly. Speaking to the TA in charge of laboratory section is not sufficient: he or she is not able to reschedule you to make up the lab exercise you missed. Make sure that you are aware of Dr. Steinly's office number, email, and phone number (108 Pearson Hall; steinlba@muohio.edu; 9-5732) in case of illness or family emergency.

A number of laboratory exercises will be followed by written assignments. Late assignment after the due date will result in loss of credit for each day that the assignment is late. Weekends are **not** exempt for this rule. Except where otherwise noted, each student will write his/her assignments independently. You **must** use your own results in laboratory write-ups unless instructed to use class data. In order to use your own data, you must be present when the data is collected. Therefore, TA's will not accept written work from students that were absent from the lab in which the experiment was conducted. Unexcused absences or failure to contact Dr. Steinly and make up the lab will result in a zero for the assignment for the lab missed.

The laboratory (Room 121 Pearson Hall) will be open on Thursday evenings from 5:00 to 7:00 PM for students wishing to do additional or review work. A teaching assistant will wait until 6:00 PM and if no students show up by that time, he or she is free to leave. This time **is not** intended to be used to make-up labs.

Resources:

Additional assigned readings will be on electronic reserve. These materials will include the criteria for grading laboratory reports and the total number of points assigned for each section of the report. To access electronic reserve go to Miami University Home page and click on libraries. On the page that come up on the screen click "Reserves"; next page pull down menu to BMZ 116 and click on the go button. Select an assignment or item by clicking on a title in the list that is presented. The next page will ask for a password and that password is Steinly. Now you are free to examine the content of the selected item. Additional material may be put on reserve at the reserve desk at Brill Science Library in Hughes Hall. This course uses 'Blackboard' at Miami's website <<http://blackboard.muohio.edu>> for the distribution of some course materials. Every student can log into the site using his/her Miami ID and password. These resources can include student grades, homework assignments, this syllabus, and other material that may be announced during classes. **Outlines and illustrations for Botany lectures can be downloaded from:**

<<http://www.cas.muohio.edu/~meicenrd/BMZ116/TBMZ116.htm>>

Course Overview

The second semester begins with the study of biological chemistry followed by discussion on cells and organelles, a concept that unifies the three life sciences. Following an introduction to the cell, you will be introduced to molecular biology. Here the unifying principles of living systems are developed further. From the unit on molecular biology, we will continue to discuss unifying principles; this section begins our lectures on cell physiology. The material on cellular anatomy and physiology will conclude with lectures on bacterial physiology. Laboratory exercises coordinated with this material will demonstrate to the students some of the current technology. The final lecture in this unit will be on genetic engineering and biotechnology to allow the students to see the practical applications of these principles. After learning about physiology on a cellular level, we first turn to plants and then animals to demonstrate from a mechanistic point of view how organisms respond and adapt to the environment.

When possible we will present the historical foundation for basic biological principles, including the hallmarks and scientist(s) responsible for these achievements. Reference to major societal issues such as uses of genetic engineering and AIDS are included in lectures when possible to make the application of biological principles meaningful to students.

Laboratory exercises are coordinated with lecture material so students will gain hands on experience with some of the principles discussed in lecture. Our approach includes labs in which students engage in cooperative learning through group effort. We have incorporated labs that show students useful technology such as DNA isolation and electrophoresis.