

Biology 114— Form, Function, Diversity and Ecology

Biology 114 is intended for students majoring in the natural sciences and is the continuation of Biology 113. In this course, you will study the organismal and supra-organismal levels of biological organization with evolution as a unifying theme. The diversity, form, function, and ecology of organisms will be covered, with particular emphasis on plants and animals.

Meeting times

Lectures: Tuesday, Thursday 8:30-9:48 A.M. Hitchcock 131
Laboratory/Recitation: 3 hours per week, Jennings 170

Staff

Instructor

Dr. John Cooley, Department of Evolution, Ecology, and Organismal Biology
Email: cooley.196@osu.edu
Telephone: 614-292-0126
Office Hours: Tuesday 10:00 A.M.—Noon (or by appointment) in 414 Aronoff

Course Coordinator

Amy Kovach, Center for Life Sciences Education
Email: kovach.71@osu.edu
Telephone: 614-292-3929
Office hours: Monday 2:00-4:00 P.M. (or by appointment) in 255F Jennings Hall

Head TA

Joy Pietkiewicz, Center for Life Sciences Education
Email: pietkiewicz.1@osu.edu
Office hours: Thursday 7:30-8:30 A.M. in the lobby of Hitchcock 131 and Friday 3:30-4:30 P.M. in Jennings 247 (or by appointment)

Issue Resolution

The CLSE believes that student concerns are usually most effectively addressed by the staff closest to the situation. Therefore, students are ordinarily expected to address issues or concerns with their TA first.

If the issue cannot be resolved by your TA, or you feel that you cannot address your concern with your TA, please contact the Head TA (Joy Pietkiewicz.1@osu.edu). If the issue is not resolved by the Head TA then contact your Course Coordinator (Amy Kovach.71@osu.edu). If the issue is not resolved by the Course Coordinator, contact the Assistant Director Matt Misicka.1@osu.edu.

Course Information

Syllabus and Website

All essential course information, including your grades and lecture notes, will be available on Carmen (www.carmen.osu.edu) listed under Biology 114. Check it daily to see when assignments are due and view reminders about the course. The course syllabus is a working document and may be modified as needed throughout the quarter with ample notice given.

Schedule

Lecture topics, readings, and course schedule are detailed in a separate document titled “Course Schedule.” Be aware that the schedule may change over the course of the quarter.

Textbooks

Campbell, N. A., J. B. Reece, L. A. Urry, M. L. Cain, S. A. Wasserman, P. V. Minorsky, and R. B. Jackson. 2008. *Biology*, Eighth Edition. Pearson Benjamin Cummings, San Francisco. ISBN 978-0-8053-6844-4

Biology 114/116 Laboratory Manual. 2009-2010. CLSE, The Ohio State University. ISBN 978-0-7380-3313-6.

“Clickers”

This class will use personal response system (PRS) keypads during lecture. **You will need to purchase a TurningPoint ResponseCard RF or ResponseCard RF LCD keypad (aka “Clicker”).** The keypad communicates with the audiovisual equipment in the lecture hall and allows us to offer questions and bonus points in lecture. It's important to bring the keypad to lecture, because your responses with the keypad will affect your grade. You are responsible for properly registering your clicker via the module in Carmen, and you are responsible for ensuring that your clicker is functioning properly and that your responses are being posted to Carmen. Clickers will be stocked at the bookstore; if you purchase one elsewhere, you are responsible for ensuring that it is compatible with the OSU system.

Optional book

The concise fetal pig study guide. BioCam Communications, Inc.

Course Meetings

Lectures

Lectures will follow the assigned readings in Campbell but may also include additional materials. The lectures are to be considered as guides to the material in the textbook; one is not a substitute for the other. The lectures are necessarily less detailed than the textbook; understanding the material at the level of the lectures will allow you to pass the exam, while understanding the material at the level of the textbook will guarantee superior performance. In cases where lecture topics deviate substantially from the textbook, supplementary materials will be provided. You are responsible for taking notes during lecture. For each lecture, notes or outlines will be posted on Carmen *after* the lecture is given.

Laboratory

Laboratory exercises are integral part of course. They are designed to complement as well as supplement the lecture. Laboratory sections will meet during assigned times and **you may attend only the section for which you are registered.** You may first encounter a topic in lab before you have it in lecture or vice versa. It is expected you come prepared to lab having read the chapter in the lab manual that will be presented. Labs do not necessarily go in the order presented in the manual—check the schedule on the syllabus.

Students with Monday lab sections will need sign-up for another lab section during the week of May 31, 2010 because of the university holiday for Memorial Day. Sign-up sheets will be in the lab room.

Laboratory/Recitation Course Policy and Expectations:

Students have *48 hours* to contact their TA about making up a missed laboratory. After 48 hours, the grade will be a 0.

Missed laboratory worksheets must be *made up within one week* of the date they were originally given.

You must supply appropriate written documentation for a medical or university sanctioned event (i.e. doctor's note, letter from coach, etc.) to be eligible to make them up. Documents that can be printed from the University's Health Center website will not be accepted. If possible, you should attend another lab section. You must **FIRST** contact the TA to ensure a seat is available in that section. The contact information is posted on Carmen>Laboratory>TA Contact Information.

Laboratory worksheets are collaborative efforts, but do require you write the information in your own words. Each individual submits his/her own work. They are due in the following lab week from when they were conducted.

Laboratory worksheets turned in after the TA requests them will earn a 25% penalty for each 24 hour period they are late. Worksheets turned in during lab after the TA requests them will be considered 24 hours late. TA mailboxes are in JE247. You can turn in your late assignment to the mailbox, but you must record the assignment in the log notebook and time-stamp your assignment. Assignments not stamped and dated will be assumed to have been turned in when the TA picks up the mail.

Missing more than 2 labs will lead to an automatic failure of the course.

Persons arriving late for a lab quiz will have the remaining amount of time to complete the quiz. Extra time will not be given. If you show up after a quiz has been given, you will not be able to take it.

Eating, drinking, and the use of a cell phone are prohibited in the lab room. Repeated offenders will be asked to leave the lab room which will then count as a missing lab.

Recitation

Laboratory and recitation are combined in this class. Recitation is a scheduled opportunity for you to ask questions about lecture and have concepts clarified by your TA. Make the most of recitation. Bring your lecture notes and come prepared to ask questions!

Office Hours

The instructor and the TAs have weekly office hours. If you cannot make it to your TA's office hours, you can attend another TA's office hours for help. Make the most of office hours! A copy of the office hours schedule is posted on Carmen.

Assignments

Lecture Exams

240 points total. There will be three lecture exams covering material in the assigned textbook readings and from lecture (the third lecture exam will be given during the same period as the final exam). Exams will include a variety of formats (multiple choice, true/false, etc.). All exam scores will be posted on Carmen as soon as they are available. Material from recitations and laboratories will not contribute directly to lecture exams, but you should understand and be able to use information from these sources to answer questions. Every student is required to complete all exams. Students are not allowed to drop *any* exam score.

Final Exam

100 points total. There will be one comprehensive Final Exam given on Wednesday, 9 June 2010 7:30-9:18AM. Questions will be in the same format as for the Lecture Exams. Every student is required to take the final examination.

Lab Quizzes

50 points total. Lab quizzes will cover material from the preceding lab, information from recitation, and information that you should have read for the current lab. Quizzes will occur at the beginning of the lab period. If you are late to lab, you will have the time remaining to take the quiz; you will not be given extra time. You will not be given a make-up quiz. Quiz format will be multiple choice, matching, short answer, fill in the blank, and true/false. Quizzes are to be taken individually, not as a lab group. There will be six quizzes worth 10 points each. The lowest score will be dropped.

Lab Practical

80 points total. The lab practical exam is comprehensive (see Exercise 9 in your lab manual on the Lab Practical Study Guide). The lab practical will cover all of the labs, but half of the material will be taken

from the fetal pig dissection labs. One section of the lab practical will be multiple-choice questions and the other section will be a timed observation.

Lab Exercises

125 points total. The lab exercise worksheets are due at the beginning of recitation following week they were assigned. They are to be completed and submitted individually, not as a lab group. There will be five lab exercises worth 25 points each (125 points total).

SALG

5 points will be given for participating in the **Student Assessment of Learning Goals (SALG)** at the end of the quarter.

Bonus Points

< 50 points total. Bonus points will also be offered for participating in an optional research questionnaire, and for answering certain questions during lectures, using clickers. Because these questions are optional, no makeups will be offered for missed questions. You are responsible for making sure that your clicker responses are posted to Carmen and that your clicker equipment is functioning properly. There are **no** other opportunities for extra credit.

<i>Assignment</i>	<i>Points</i>
Lecture Exams (3)	240
Final Exam	100
Lab Quizzes (5)	50
Lab Exercises	125
Lab Practical	80
SALG	5
<i>Total</i>	<i>600</i>
<i>Bonus points</i>	<i><50</i>

Grades

Your final grade will be based on the points you earn during the quarter. Final grades may be adjusted based on relative performance. Grades will follow the standard OSU grade scale and will not be curved or rounded up. Based on a total of 600 points, you need the following to earn each letter grade:

<i>Points</i>	<i>Grade</i>
558	A
540	A-
522	B+
498	B
480	B-
462	C+
438	C
420	C-
402	D+
378	D
360	D-
0	E

Course Policies

Grade Appeals

You are responsible for monitoring your own progress throughout the quarter and for making sure that your grades posted on Carmen are accurate. Questions about regrades, grading mistakes or grades that are missing should be directed in writing to your TA within one week after the posting of graded class material to Carmen. Grade disputes brought to the attention of your TA/Course Coordinator more than ten (10) class days after they have been posted will not be considered.

Make-Ups

Lecture exams and assignments

If you are too sick to take a lecture exam, *please contact Amy Kovach.71@osu.edu, the Course Coordinator, no later than the day of the exam.* Medical excuses will be accepted only if the student has been seen and treated by a qualified medical professional during the period of illness. Other valid excuses are limited to problems that are beyond the student's control, such as military duty, intercollegiate athletic or academic activities, funerals, etc. Written documentation of these activities, or written documentation of your illness from a physician must be supplied before you can take a make-up exam. Downloaded forms from the OSU Health Center are not accepted. Makeup examinations may be in a different format from the original examination.

Section changes

All lab/recitation section changes and additions must be done through the Course Coordinator.

Communication

Each TA will have office hours and will give you an e-mail address at which they can be reached. Contact information for TAs is also posted on Carmen. In an emergency, TAs can also be reached by calling the Biology Office in 260 Jennings Hall at 292-9861. A message will be left in the appropriate TA mailbox in 247 Jennings and the TA will return your call within 24 hours.

We encourage in-class participation, and we encourage the use of email for communication with your instructors and TAs. However, you should be aware that while we will attempt to answer electronic communications in a timely fashion, pressing questions emailed after business hours the day before an exam/assignment due date may or may not receive a response before the next class meeting. Likewise, emails sent after close of business on Friday may not receive a response until the following Monday. Furthermore, certain questions/concerns may be inappropriate or too complicated to answer by email. In such cases, we reserve the right to request that you make an appointment to discuss these matters with an instructor face-to-face. Please see the instructions on how to communicate appropriately through email that are posted on Carmen.

In all communications with instructors and peers, you are expected to exercise common courtesy. Rules of civility dictate that you should refrain from talking or other disruptive activities during class meetings, unless you are actively participating in class activities. We encourage any and all students bothered by student chatter to report it. Repeat offenders will be removed from the course.

The Course Coordinator and Head TA work to keep the course running smoothly and to make your experience a positive one. If you have a problem, please contact us and we will work to resolve it.

Academic Integrity

The Ohio State University's Code of Student Conduct (Section 3335-23-04) defines academic misconduct as "Any activity that tends to compromise the academic integrity of the University, or subvert the educational process." Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, possession of unauthorized materials during an examination, class disruption, inappropriate use of lab materials, and others explained in the Student Code of Conduct (http://studentaffairs.osu.edu/resource_csc.asp). Ignorance of the University's Code of Student Conduct is never considered an excuse for academic misconduct.

Violations of the student code of conduct include but are not limited to:

- Plagiarism – copying of material from another source word for word, rather than paraphrased, as well as failing to provide information regarding the source of the paraphrased material.
- Any type of copying or use of notes during examinations or quizzes.
- An imposter taking an examination for someone else.
- Any type of collaboration on laboratory exercises or reports that is not expressly permitted (see lab information below); this includes copying another person's exercise or report, either in part or in total.
- Submitting work that is not your own.
- Submitting any material from another course (including CLSE courses) to fulfill an assignment in Biology 114.
- Alteration of any grade or other mark on any course assignment by a student in an effort to change the earned grade or credit received from the assignment.
- Presenting false documentation to excuse a missed assignment or exam.

If we suspect that a student has committed academic misconduct in this course, we are obligated by University Rules to report our suspicions to the Committee on Academic Misconduct (COAM). If COAM determines that you have violated the University's Code of Student Conduct, sanctions could include a failing grade in this course and/or suspension or dismissal from the University.

Diversity

The instructors embrace the university's mission regarding diversity (visit the Dept. of EEOB's Diversity website to learn more: http://www.biosci.ohio-state.edu/~eeob/div_res.html). We are committed to the goals of creating a welcoming climate for all students and promoting a shared, inclusive understanding of diversity. If you have any concerns about diversity-related issues, you should feel free report your concerns to: <http://excelsior.biosci.ohio-state.edu/~eeob/drupal/?q=diversity>

Accessibility

Anyone who needs an accommodation based due to a disability should contact the Course Coordinator to arrange an appointment as close to the beginning of the quarter as possible. At that time you can discuss the course format and explore potential adaptations to meet your needs. The CLSE relies on the Office of Disability Services for assistance in verifying the need for accommodations and developing accommodation strategies. If you have not previously contacted the Office for Disability services and anticipate needing accommodations to succeed in this course, you should contact them as soon as possible (www.ods.ohio-state.edu).

Sexual Harassment

OSU and the CLSE consider sexual harassment offenses to be unacceptable behaviors that destroy opportunities for learning. While all members of the staff involved in this course have been trained in the OSU sexual harassment policies and procedures, this is not true for all OSU students. The emphasis in this course on informal laboratory and cooperative/collaborative learning techniques can result in situations mistakenly interpreted by some students as a desire to form a relationship outside the confines of the learning goals and activities of this class. Incidents of inappropriate sexual advances have resulted from misunderstandings about this issue. As always, all students in this class are expected to behave at all times with mutual respect and responsibility. Please report any concerns about questionable or unwanted behavior to the Course Coordinator, Amy Kovach (<http://hr.osu.edu/cst/sexualharassment.htm>).

Safety

To promote safety on campus, transportation across campus is offered by the OSU Department of Public Safety. Service is available between 7:30 pm and 2:40 AM during the Spring quarter. Call 292-3322 to schedule a pick-up. You must provide at least one hour's notice (http://www.ps.ohio-state.edu/sss/escort_info/).

How to succeed in this course

- Read the text before coming to lecture. Become familiar with new terms.
- Take detailed notes in lecture and pay particular attention to topics not discussed in the text and the handouts.
- Ask questions.
- Be sure to keep up with lecture material and textbook readings. This course moves rapidly and builds on previous material. Plan to spend at least 6 hours per week studying the lecture material and reading the textbook. One hour spent early equals two or more hours just before the exam.
- You will need to learn many new terms to pass the course and to understand the lectures. Learning biology is like learning a new language.
- Be sure that you reserve enough time for this course. If you work more than 20 hours per week, this should be the only major science course you are taking.
- Ask your TA for help.

GEC Expected Natural Science Learning Outcomes:

- Students understand the basic facts, principles, theories and methods of modern science.
- Students learn key events in the history of science.
- Students provide examples of the inter-dependence of scientific and technological developments.
- Students discuss social and philosophical implications of scientific discoveries and understand the potential of science and technology to address problems of the contemporary world.
- Natural Science coursework fosters students' understanding of the principles, theories, and methods of modern science, the relationship between science and technology, the implications of scientific discoveries and the potential of science and technology to address problems of the contemporary world.

How students meet the GEC objectives through this course

In Biology 114, majors in the biological sciences meet the GEC Natural Science Learning Objectives in multiple ways. The course, in conjunction with Biology 113, is an in-depth study of the laws, structures, and interrelationships within the biological universe. Students gain an understanding of the foundations of modern biology by studying organismal diversity, ecological relationships within and among species, behavior, and the evolutionary and ecological constraints placed upon form and function, with particular emphasis on plants and animals. In the laboratory activities, students not only reinforce the biological concepts introduced in lecture, but also learn scientific reasoning and methods. Through the study of the history and key discoveries in biology, Biology 114 students learn the details of the interrelationship between technology and scientific methods in the modern investigative study of biology, and gain an appreciation of the social and philosophical ramifications of the knowledge of biology and biological discoveries.

Learning Outcomes

These are guidelines to how students should focus their learning in each of the four main topics covered in Biology 114.

Successful students will be able to:

- 1) Evolution
 - a) explain the mechanisms of microevolution.
 - b) use concepts associated with microevolution and macroevolution to explain patterns of speciation and extinction
 - c) explain mechanisms of sexual selection and the evolution of social behavior.
 - d) describe methods used to infer evolutionary relationships.
 - e) explain the relationship between evolutionary hypotheses and the biological classification system.
 - f) use the geologic time scale to identify when major biological evolutionary events occurred.
- 2) Diversity of life
 - a) characterize the biological domains and kingdoms.

- b) describe the major features of and evolutionary relationships within the Kingdoms Fungi, Plantae, and Animalia.
- c) describe the major groups of animals in terms of their body plan, embryology, and symmetry.
- 3) Organismal form and function
 - a) explain how different groups of plants reproduce and transport water and food.
 - b) describe the major groups of animals in terms of their characteristics, such as modes of reproduction, feeding specializations, skeletal system, sensory system, gas exchange, and osmoregulation.
- 4) Population and community ecology
 - a) explain ecological phenomena related to populations and communities in terms of basic mathematical models.
 - b) trace chemicals and energy through an ecosystem to explain human and global impacts of perturbations.
 - c) describe the interrelationship between biodiversity and community interactions, such as such as predation, competition, and symbiosis.

This syllabus is a working document and may change with ample notice given.