

Biology 112 – Introduction to Organismic & Evolutionary Biology

Winter 2013

Instructor information

Dr. Ross A. McCauley

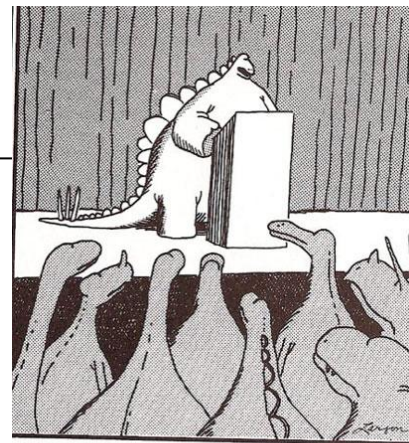
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Office hours: MWF 11:15 a.m. -12:10 p.m., M 1:25-2:30 p.m., WR 1:25-2:00 p.m.,
and by appointment



"The picture's pretty bleak, gentlemen. ... The world's climates are changing, the mammals are taking over, and we all have a brain about the size of a walnut."

Course information

Meeting time and place: TR 10:10 am - 12:10 pm, Berndt Hall 234

Course Description:

This course is an initial introduction to the science of biology from an organismal and evolutionary perspective. It can be taken either alone to fulfill one of your science general education requirements or as the first course toward the Biology major. We will be focusing in this class on a variety of topics including the use of the scientific method, evolution, cell structure, cell division, Mendelian genetics, systematics and biodiversity, ecology and conservation to name a few. Each of these topics represents large sub-disciplines of Biology and our coverage of each will only scratch the surface. It will hopefully be enough to give you an idea of how the natural world works and spark your interest in a particular sub-discipline of the fascinating study of life on Earth.

gtPathways Course Criteria and Student Outcomes

Bio 112 is a course certified for guaranteed transfer among other Colorado Colleges and Universities. Thus it must meet a select group of criteria as follows.

- 1) Develop foundational knowledge in specific field(s) of science.
- 2) Develop an understanding of and ability to use the scientific method.
- 3) Recognize that science as a process involving the interplay of observation, experimentation and theory.
- 4) Develop quantitative approaches to study natural phenomena.
- 5) Identify and highlight interconnections between specific science courses being taught and larger areas of scientific endeavor.
- 6) Distinguish among scientific, nonscientific, and pseudoscientific presentations, arguments and conclusions.

Additionally all gtPathways science courses are expected to provide students the ability to develop specific competencies. These include...

- 1) Critical Thinking, in which students become capable of critical and open-minded questioning and reasoning based on an understanding of an argument. The student should be able to examine issues and ideas and to identify good and bad reasoning in a variety of fields with differing assumptions, contents and methods.
- 2) Mathematics, which the ability to use mathematical methods, reasoning and strategies to investigate and solve problems.

Required text:

- Reece, J.B., L. A. Urry, M. L. Cain, S. A. Wasserman, P. V. Minorsky, and R. B. Jackson. Campbell Biology Volume I. Second Custom edition for Fort Lewis College. Ed. Pearson/Benjamin Cummings, Pearson Learning Solutions. (ISBN-13: 978-1-256-82108-3 and ISBN-10: 1-256-82108-X).

This text is a special edition for Fort Lewis College. It is a select compilation of chapters from the text below that we have assembled for this class in order to save you money.

- Reece, J.B., L. A. Urry, M. L. Cain, S. A. Wasserman, P. V. Minorsky, and R. B. Jackson. 2011. Campbell Biology. 9th. Ed. Pearson/Benjamin Cummings, San Francisco, 1267 pp. (ISBN-13: 978-0-321-55823-7 and ISBN-10: 0-321-55823-5)

Course Website: <http://moodle.fortlewis.edu>

The course website contains all of the course materials as well as updates to the schedule. I will also upload at the appropriate time review sheets for all exams approximately one week before the exam. Be sure to check the site often for updates.

Prerequisites: An interest in the structure and functioning of the natural world.

Course Evaluation

Grades will be determined through a mix of tests, in-class activities, a short “lab” write-up, and a couple homework assignments. The approximate distribution of these points is as follows:

| | |
|--|---------|
| Exams | 400 pts |
| In-class activities and homework assignments | 300 pts |

Your grade will mostly be a sum of the earned points you have accrued throughout the semester with the following exceptions.

1. I will replace the lowest score you receive on an in-class activity and replace that with your highest score for the final tally of your grade. Thus if you get a 40% on one assignment at anytime and a 100% on another assignment at some other time, the 40% will be replaced by a 100%.
2. There will be no make-up of missed in-class activities. So if you miss an in-class activity you will receive a 0% which will then become your lowest score (see above).
3. Make-up lecture exams may be scheduled within 5 days of the original exam date **ONLY** in the case of a legitimate documented absence. Legitimate absences include any absence with a letter documenting that absence from the appropriate college official, an official college sporting event, a documented medical excuse, or a documented religious observance. If you miss an exam for a legitimate reason and are unable to make up the exam within 5 days the score on the final exam will be substituted for the missed exam score. If you miss for an illegitimate reason then you will receive a zero for that particular exam.
4. Extra credit will be available to anyone wishing to complete it **BEFORE** the last day of classes (April 18). You will only be allowed however, to turn in two extra credit assignments - I will not accept more than two per student. Extra credit may be comprised of a summary of an approved paper on a biological topic or the summary of a biology sponsored seminar. I will post ca. 5 options for you to read on the course website, so you may chose your two favorite topics to read about. Acceptable seminars will be announced in class and posted on the course website. Note that some semesters the biology department does not sponsor any seminars. Your summary must be between 1 and 2 double spaced pages and be written in your own words. Copy and paste is not allowed, and will be considered plagiarism. Your extra credit should be submitted electronically either via the course webpage or via email.
5. Assignments turned in late will be subject to a penalty of 10% per day late with a 0 for a week or more late OR turning in after I have already graded and returned it to the rest of the class. Homework assignments may be submitted in paper or via the link on the Moodle website at any time prior to the due date.

Other policies/ detailed requirements**Tests:**

Exams will be a mix of multiple choice, short answer, and essay questions. The final exam will be partially comprehensive (approximately 1/3 comprehensive, 2/3 new material).

In-class assignments:

These assignments will be completed either individually or in small activity groups. Thus for many in-class assignments you may only be turning in one assignment sheet for your group. The grade then for each member of the group will be the

same. Due to this make sure that each of you participates in your respective groups. Working together cooperatively will lead both to your learning more and to a higher grade.

Academic Integrity:

The Biology Department upholds College policy on Academic Integrity. Therefore, students who commit acts of academic dishonesty (a.k.a. cheating, copying, plagiarizing):

1) on homework or other less major assignments, will receive a ZERO on the assignment in question, and will be reported to Academic Affairs.

2) on exams, major papers or reports will earn a ZERO and be automatically removed from the COURSE, and will be reported to Academic Affairs.

Any student who accumulates two reported incidents of dishonesty with the Academic Affairs office will have a formal hearing with the Academic Standards Committee and faces academic dismissal from the College.

Attendance:

While I do not take a daily role, regular attendance is expected. It is also required if you want to do well. If you know you are going to miss class please let me know beforehand. If your absence results in your missing an exam, and is legitimate, the aforementioned policy stands.

Classroom conduct:

While I hope it goes without saying, please respect the rights of myself and your fellow classmates. If you are late try not to disturb everyone else. Additionally please leave mobile phones, pagers, iPods, etc, at home or turn them off and keep them stowed during class. I will not allow texting or checking of messages on any electronic device during class time. If this becomes a problem you will be asked to forfeit your device. Such activity is not only very disrespectful but also interferes with your ability to learn.

Drops:

The college deadline for dropping this class for it not to appear on your transcript is census date, January 22. Without exceptional circumstances (ie. death in family, hospitalization, etc.) I will not assign a grade of "W" on a drop slip after this date unless you are currently passing the course with a C or better. Poor class performance alone will not be considered sufficient for granting a "W".

Additional Help/Tutoring:

If you have trouble with the material at any time during the course I strongly encourage you to see me about it. It is my goal to see you achieve the stated goals of this course. If you are having troubles I recommend that you see me early and not put it off. I can assist you on my own or refer you to the tutoring services offered for this course.

Accommodations:

Students with disabilities who require reasonable accommodations to fully participate in course activities or meet course requirements must register with the Disability Services Office. If you qualify for services through the Disability office, bring your letter of accommodations to me as soon as possible so I can make the appropriate arrangements. Letters are available through Dian Jenkins, Coordinator of Disability Services, 280 Noble Hall, 247-7459.

Tentative Lecture/Activity Schedule

Please note that this is only a tentative schedule. Any modification to this schedule will be announced in class and posted on the course website.

Chapter numbers for the readings refer to Reece et al., 9th edition.

| Wk | Date | Topics | Reading | Assignment/Activity |
|----|---------------------|--|-----------------------------|--|
| 1 | Jan. 8/Jan. 10 | | | |
| | | T: Introduction/The Scientific Method R: Review petri plates/Coot Case Study | Ch. 1 | Growth of microorganisms |
| 2 | Jan. 15/17 | | | |
| | | T: Cell structure R: Cell cycle/Mitosis | Ch. 6 Ch. 12 | |
| 3 | Jan. 22/24 | | | |
| | | T: Meiosis R: Mendelian genetics | Ch. 13 Ch. 14, 15 (part) | Mendelian Genetics: using a Punnett Square |
| 4 | Jan. 29/31 | | | |
| | | T: Wrap-up R: EXAM I | | |
| 5 | Feb. 5/7 | | | |
| | | T: Evolution as a unifying biological principle R: Video: Great Transformations | Ch. 22 | |
| 6 | Feb. 12/14 | | | |
| | | T: Natural Selection R: Evolution of Populations | Ch. 24 Ch. 23 | Bean Predation |
| 7 | Feb. 19/21 | | | |
| | | R: Speciation T: Squirrel Monkey Case Study | Ch. 22 | |
| 8 | Feb. 26/28 | | | |
| | | T: Phylogeny and Systematics R: EXAM II | Ch. 26 | Phylogeny Construction |
| 9 | Spring Break | | | |
| 10 | Mar. 12/14 | | | |
| | | T/R: Biodiversity; Domains Archaea & Bacteria; Viruses; Protista | Ch. 27, 28 | |
| 11 | Mar. 19/21 | | | |
| | | T: Kingdom Plantae R: Plant Tour (Berndt Hall Greenhouse) | Ch. 29, 30 | |
| 12 | Mar. 26/28 | | | |
| | | T: Kingdom Fungi R: Kingdom Animalia | Ch. 31 Ch. 32, 33, 34 | |
| 13 | Apr. 2/4 | | | |
| | | T: Animal Tour R: Exam III | | |
| 14 | Apr. 9/11 | | | |
| | | T: Intro to Ecology/Population Ecology R: Gall study | Ch. 52,53 | |
| 15 | Apr. 16/18 | | | |
| | | T: Community Ecology R: Ecosystem Ecology/Global Environmental Issues | Ch. 54, 55 Ch. 56 | HW: Ecological Footprint |
| 16 | Apr. 22 | Final Exam 12:00 - 2:00 p.m. | | |