Evolution, Ecology and Behavior (EEB) – Biology 202

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|  |  |  |  | \* Lab Coord. |  |  |  |  |

**Email:** We will use email to communicate with you (e.g. class announcements or clarifications). Also, you can use email to make appointments to see us. We prefer to answer questions related to course or lab material in person rather than over email because we can help you better.

**Lecture:** MWRF 11:30AM – 12:20PM; Nobel Hall 201

(Thursday discussions often meet in: Vickner 202, 203 & 204)

**Laboratory (attend your registered lab only):** 334 Nobel Hall

Section 3: M 1:30 – 4:20 (Grinnell) Section 6: W 1:30 – 4:20 (Kittelson)

Section 4: T 10:30 – 1:20 (Elias) Section 7: R 1:30 – 4:20 (Elias)

Section 5: T 1:30-4:20 (Elias)

**Tutoring:** Sunday-Thursday 7:00-9:00PM in the common area in Nobel Hall 221. There are sessions held in the Diversity Center Thursdays 7:00-9:00PM.

**Course overview:** EEB is the last of four required courses in the Biology major. Although evolution, ecology, and animal behavior focus on different questions, all three disciplines are strongly integrated. This class explores interactions between population genetics and evolutionary processes, and how organisms respond to each other and their environments over scales of space and time. We will examine how complex ecological and evolutionary processes shape genetic and organismal diversity. Topics in this class are relevant to students who wish to pursue careers in a wide variety of disciplines including health and veterinary professions, conservation and resource management, K-12 teaching, positions in government, non-profit and the private sector. The course serves as a mid-level capstone that emphasizes critical aspects of the scientific method: hypothesis testing, experimental design, analysis, synthesis, and oral, visual and written communication.

**Learning Outcomes:** After taking this course you will be able to:

* Describe mechanistic processes that interact with the environment to shape patterns of behavior, population and species diversity.
* Measure and analyze experimental variables related to EEB research.
* Integrate EEB concepts with other disciplines such as biochemistry, physiology, genetics, conservation, resource management, health and well-being.
* Summarize experimental questions, describe data statistically and visually, and articulate conclusions using the data.
* Use the scientific method: design, implement, analyze and communicate the results of experiments in both written and oral formats.
* Critically evaluate and discuss published scientific research.
* Describe the breadth of topics encompassed by EEB, both theoretical and applied.
* Develop an appreciation for complex interactions over different levels of space and time.

**Texts:** Skim assigned reading *before* coming to class; read again with your notes after class. The readings provide additional context to concepts covered in lecture and discussion. You may not be asked specifics about the research, but you can use these examples to show us how you understand concepts. It will also allow you to better analyze a novel situation or case.

**Required:**

Kardong, K. 2008. *An Introduction to Biological Evolution,* 2nd Ed.

Molles,M.C. 2010. *Ecology: Concepts and Applications.* 6th Ed.

McMillan,V.E.2011. *Writing Papers in the Biological Sciences.* 5th Ed.

Elias,Grinnell, & Kittelson. 2016. *Laboratory Manual for EEB.*

**On Moodle:**

Ambrose and Ambrose. 2002. *A Handbook of Biological Investigation*.6th Ed.

Carroll, S. 2005. *Endless Forms Most Beautiful: The New Science of Evo Devo.*

Freeman, S. 2008. *Biological Science*. 4th Ed. (may use your own 5th Ed. versions)

Scott, G. 2004. *Essential Animal Behavior.*

Weiner, J. *1994. Beak of the Finch.*  (available in its entirety at the Book Mark)

**Discussion:** Attendance at discussion on Thursdays is required and we expect you to *discuss* the assigned readings; your grade will be docked 10 pts for each lack of an excused attendance and no participation. See the discussion rubric, which we will use. Complete the reading and do assigned questions before class; bring additional insights or questions related to the reading.

**Exams**ask you to apply concepts and evaluate data beyond recognizing or describing terms; exams consist of multiple choice, matching, T/F, computations, short answer and essays, and will include material from lecture and discussions. Each exam covers material only from that section of the course, but you will be expected to integrate evolutionary concepts throughout.

**Exam 1:** M, 3/14 **at 7 pm Exam 2:** W, 4/20 **at 7 pm Final Exam:** T, 5/24 **at 8** **am**

If you have a *legitimate* conflict with **any** of the lab or lecture exams please complete the exam conflict form on Moodle and submit it to Eric Elias *along with* your class/activity schedule **no later than Monday, 23 February.** If a documented emergency arises on the day of an exam, contact one of the course instructors immediately. Accommodations are not guaranteed.

**Evaluation:** Final grades in the course will be based on the following lecture and lab work:

Three lecture exams at 100 pts each\* 300 pts \*one passing\*

Literature Review (-10 pts if missing Labs1-2 assignments) 50 pts

Adaptive Radiation in the Hawaiian Islands Presentation 20 pts

Peer Review of Literature Review (-5 pts if poorly done) 10 pts

Duckling Imprinting Report 40 pts

Independent Research Paper (-10 pts if no or poor proposal) 65 pts

Oral Presentation of Independent Research 15 pts

Laboratory Exam 20 pts

**520 points**

**Grading:** We do not curve exams or final grades; there is no extra credit. The scale is:

A 93-100%

A- 90-92.5%

B+ 87.5-89.5%

B 83-87%

B- 80-82.5 %

C+ 77.5-79.5%

C 73-77%

C- 70-72.5%

D+ 67.5-69.5%

D 60-67%

F <59

**\* You must earn >60% on at least one exam to pass the course \***

**You also must earn a C or higher in Bio202 to continue in Biology electives**

If you disagree with how an assignment or question was graded, submit a written request articulating why you think you deserve more points. Questions about papers go to your lab instructor. Written arguments are accepted 1-4 days after getting an assignment back.

**Papers:** One of the objectives of this course is to hone your scientific writing skills. We encourage you to ask questions about a paper’s style, organization and structure in person rather than by email; use e-mail to schedule an appointment, but well before the paper is due. We will not review drafts. It is very beneficial to seriously consider mistakes made on drafts or previous papers because it can help decrease chances of making the same mistake twice.

**Academic Integrity and Plagiarism:** You have vowed to uphold our honor code and abide by the academic honesty policy. Please see: <https://gustavus.edu/general_catalog/current/acainfo> for clarification. Using the ideas and/or words of another writer and representing them as your own is plagiarism, and also includes lifting material from web sites. We will help you learn how to cite and summarize other writers responsibly, but your McMillan writing guide is indispensable. Ultimately, it is your responsibility to give credit to those whose ideas and language you use in written work. If you plagiarize or are dishonest in any of your work, we will discuss the issue with you and depending on the outcome of that discussion, you will earn a zero for the assignment, and we will report your academic dishonesty to the Dean. Each year we detect 1-several students who have plagiarized material, especially related to the literature reviews. Generally, they think, ‘well they said it so much better, and I don’t know how to reword it.’ However, you must reword their conclusions or statements, and this takes time. Make the time. Also, make a strong effort to know what plagiarism is and how to avoid plagiarism because it damages both your grade and reputation as a student in the major. Students will fail the course if they repeat an offense a second time. *Please abide by the honor code. Write the honor code and sign your name on each of your exams and papers.*

**How to be a successful student in EEB:**

* Do the reading and study questions on a weekly basis, the more you encounter and think about the material the better you will *understand* it.
* Plan ahead. Start projects early, especially the bigger ones.
* EEB makes sense to you when you hear and read it, but people often struggle to explain or apply concepts, analyze or interpret related data.
* Challenge each other with questions that apply the information; go beyond reciting definitions or processes, which is a necessary first step.
* Avoid being passive. Take notes, which is a form of physical learning. You will recall concepts more readily if you practice different modes of learning.
* Review corrected materials, especially papers, to avoid making the same mistake twice (and irritating your reader).
* When in doubt, read the assignment prompts, the rubrics and the directions. Don’t ask without trying to find an answer for yourself first. We respect informed questions and independent problem solvers, as do bosses.
* Get feedback from multiple sources; give constructive feedback to peers.
* Use the open forums staffed by TAs for statistical and paper assistance. Use the Writing Center, Reference Librarians, office hours, tutors and other copious academic resources.
* Be engaged. Be curious.
* Sleep…at night. Your brain uses this time to process information.

**Academic Resources**

**Students with Disabilities:** We are committed to ensuring full participation of all students in this class. If you have a documented disability or think you have a disability of any nature that requires reasonable academic accommodations, then you should speak with the Disability Services staff. You must also let us know. Course requirements cannot be waived, but reasonable accommodations may be provided with documentation. To discuss your needs and make appropriate plans please contact Disability Services or Kelly Karstad (x7138, ([www.gustavus.edu/advising/disability/](http://www.gustavus.edu/advising/disability/), [kkarstad@gustavus.edu](mailto:kkarstad@gustavus.edu)) as early as possible. Accommodations cannot be made retroactively). All discussions remain confidential.

**Reference Desk Assistance**

The Library’s Reference Desk is amazing. Reference Librarians provide one-on-one guidance to help you with your research; they can help you find information on a topic, develop search strategies in library catalogs and databases, and provide assistance at every step. No appointment necessary. Visit [www.gustavus.edu/library/reference\_question.html](http://www.gustavus.edu/library/reference_question.html) for hours and information.

**Multilingual Learner Academic Specialist**

Support for multilingual students is available through the Academic Support Center and Jody Bryant (x7197 or [jbryant2@gustavus.edu](mailto:jbryant2@gustavus.edu)). Jody can meet individually with students for tutoring in writing, consulting about academic tasks, and helping students connect with support systems. When requested, the MLAS can consult with faculty regarding effective classroom strategies and can provide students with a letter to a professor that supports appropriate academic arrangements (e.g., additional time on tests, additional revisions for papers). Faculty make decisions at our discretion. Multilingual students also can seek help from consultants in the Writing Center.

**The Writing Center**

The Writing Center helps you clarify ideas and hone your written communication skills. The Writing Center is not an editing or proofreading service. Writing Consultants can, however, help you learn to self-edit and work with you on the problems that you identify. The peer consultants work with writers who are just getting started, writers who already have a rough draft, and writers who are ready to consider finishing touches. For optimal service, please bring a copy of your assignment and two copies of your draft.

**Here's how Writing Consultants can help you:**

* a one-on-one consultation with a peer tutor
* help with reading and interpreting assignments
* discussion of revision strategies
* assistance with brainstorming, planning, and invention
* attention to thesis development and argument
* assistance with style, usage, and documentation
* help with editing strategies.

Visit the Writing Center web site to see hours, locations and to make appointments on-line: <https://gustavus.edu/writingcenter/>