

Course Syllabus

BIOL 211.12/211D.12 - Biodiversity, Ecology & Conservation Biology

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Office Hours: Tuesdays 12:15-1:30 PM; Wednesdays 1-2:30 PM or by appointment. (These office hours may change during the semester. The most up to date office hours are posted in the News section of the class OAKS page).

Biol 211 Meeting Times/Location – Class TR 10:50-12:05 – 138 SSMB; Discussion R 12:30-3:30 LCTR 341

Course Catalog Description

A foundation course for intermediate-level biology majors. Students will explore synthetic biological concepts, including evolution, population-community- ecosystem ecology, behavior, biodiversity, and conservation. In a weekly, one-hour recitation section, students will be required to read, discuss and critique scientific literature (both popular and primary) related to these topics. Prerequisite(s): BIOL 111/BIOL 111L, BIOL 112/BIOL 112L. Co-requisite(s): BIOL 211D.

Instructional Objectives

This course is intended to foster an understanding of the diverse ways organisms interact with the environment, the fundamental principles of ecology, evolution, and conservation biology, and to learn about the three domains of biodiversity on Earth. More specifically as a student in this course you will

- review the theory of evolution, as posed by Charles Darwin.
- explore the modern synthetic view of evolution which integrates genetics, molecular biology and many other areas of biology into an explanation of how evolution occurs.
- explore mechanisms (or processes) of evolution including
 - how populations evolve at the genetic level (evolutionary genetics).
 - how new species arise (speciation)
 - how biologists are revealing the way life diversified on earth and what the current “tree of life” looks like (systematics & phylogeny)
- explore the evidence in support of evolutionary theory and processes.
- explore the features of the diverse species that inhabit the planet to discover
 - the anatomical, physiological and behavioral associations between related groups of organisms
 - the contributions of the diverse groups of living organisms to ecological systems and human welfare
 - an astonishing variety of lifestyles, traits, and solutions to the challenges of life
- explore how populations of organisms change in abundance and distribution (population ecology)
- explore ecological interactions between species within communities (community ecology)
- explore processes and changes that occur at the level of ecosystems.
- apply evolutionary and ecological concepts and theories to issues related to the conservation of biodiversity on earth (conservation biology).

Student Learning Outcomes

At the end of this course, students are expected to be able to:

- describe the processes by which populations of organisms change in size
- explain the forces that lead to evolutionary change in populations and diversification among species
- interpret phylogenetic trees to describe the evolutionary relationships they depict
- discuss how interactions with the physical environment and with other organisms influence populations and communities
- build a foundation of knowledge about life's diversity and its interrelatedness
- apply ecological and evolutionary principles to the conservation of biodiversity
- apply the following skills used by professional biologists: use primary literature, generate scientific questions and pose testable hypotheses, analyze data to evaluate hypotheses, use quantitative models to describe biological processes, and communicate ideas (in writing & orally) to diverse audiences (scientific, general public etc...)

Teaching & Learning Approaches

In this course we will work both individually and collaboratively to solve (or better understand) real-world biology-related questions/problems/issues. This will be done to develop a better understanding of essential connections between different areas of biology; how to apply and synthesize biological concepts and principles; find and evaluate biological information; and communicate ideas and information about biology to a variety of audiences. In short, we will be immersed in biology in the context of critically important questions and issues that face us both as future professionals in biology-related fields, but also as citizens of this planet.

The teaching approaches used in this class are likely to be different from those that you have experienced in other high school or college science classes. Here are the top ten things you should know about how the class:

1. **Problems & Case Studies** - We will be working on several problems or case studies during the semester which serve to provide an engaging real-world and meaningful focal point for learning. The case studies will revolve around topics that you would find interesting and are relevant to your personal, academic, future professional or civic lives. Please visit the **What & Why of Problem & Case Studies Based Learning** in the Content section of our course OAKS page for more information about the learning approaches we will use in this class.
2. **Learning will be an ACTIVE process!** Although I do lecture in this class, I also use a variety of other more active learning strategies. When I do lecture, it will almost always be in response to something that you first do (an activity) before or in class.
3. **To learn in this class, YOU will have to begin by trying to first learn on your own!** Every problem we explore in this class will require that you do some background research to inform your understanding. Most classes will require that you come prepared to class having completed the research for that class.

4. **I do NOT expect you to learn completely on your own!** Instead, I expect that you will FIRST TRY to learn it on your own, at home, through reading and homework activities. Class time will then be used to provide you with feedback on what you have learned and hopefully correct/challenge misconceptions and deepen understanding by applying what we learn to the problem we are working on.
5. **Exams are only ONE way learning progress will be assessed!** At the end of many of the problems or case studies you will present your solutions or recommendations. The format for presenting your solutions will vary. Some examples include: a structured class debate, a written policy statement, a magazine editorial, a stakeholder letter, or a proposal.
6. **Much of the learning in this class will happen collaboratively** – If you took Biol 111/112 lab at the CofC, you are already familiar with the kind of teamwork that will occur in this course. Teamwork will nearly always be done in class. For the most part you will not have to meet with other team members outside of class, unless you want to! The only expectations I have for team work is that you come to class having completed homework; that you contribute ideas; that you respectfully listen to others; and that you offer constructive evaluation of other's ideas. I think you will come to find that explaining/defending/evaluating ideas in class will foster much deeper learning.
7. **Peer Evaluation** – Periodically, over the course of the semester, each member of every team will be asked to complete a peer evaluation form. Peer evaluation forms and instructions for completing the form, along with how peer scores influence team grades can be found on the class OAKS page.
8. **I often answer questions, first with another question!** – I do not do this be purposefully evasive or difficult; it is instead because I cannot help you learn unless I know what you are thinking, that is, the meaning you are making of the complex concepts we are exploring.
9. **Feedback...Feedback...Feedback!** Among the most important reasons for using the teaching strategies in this class is that they are intended to provide you with constant and on-going feedback on your learning. If you find that you are still struggling with a concept after a class, then come and see me! I think you will find that I am happy to help anyone who wants to learn!

Assignment Expectations

I have certain expectation for how you should submit assignments, and these are mostly just to make the process of reviewing, grading and providing feedback on your work more effective and efficient.

1. All assignments should be completed by the due date (on the class schedule)
 - o Assignments must be submitted **according to the assignment guidelines posted for each assignment on OAKS**. In general, this means they must be uploaded to the proper OAKS Dropbox, and they should be submitted as a PDF file.
 - o Late assignments will be reduced one grade for each day they are received past the due date. However, remember that your team may be relying on you to complete your work, so late work could also have an influence on your team's work and may affect your peer evaluations (see below), and on my assessment of your participation in class.
2. **Back-up your work on a jump drive or in a cloud-based storage app like Dropbox or Google Drive. A last minute computer crash is NOT an excused reason to submit a late assignment.**

Attendance

What we learn in this course cannot simply be found in a textbook, or by reviewing a classmate's lecture notes! Instead we will be relying on each other to share ideas, explore our conceptions, elaborate on the biology we learn and explore connections of this knowledge to important biological issues and questions. **For this reason you have to come to both class and discussion!**

- **Excused Absences:** The following is a list of the only acceptable reasons for missing a class or exam:
 - Illness or other medical emergencies.
 - Family emergencies.
 - Family or religious engagements/celebrations - You must make me and your teammates aware of these BEFORE you miss class.
 - C of C athletics travel conflicts - I will require a list of conflicting travel dates from the athletics office within the first 2 weeks of class.
 - If you miss a class for an excused reason, you must get it excused through the College's absence memo office - <http://victimservices.cofc.edu/absence-memo/index.php>
- Missing class for an unexcused reason will have substantial effect on your class participation & effort grade (see below). **Missing more than 2 classes – unexcused – can result in you being dropped from the class.** Moreover, we will frequently have in-class assignments and quizzes. If you miss a class for an unexcused reason on one of these days, you will simply receive a zero (0) on that assignment. These missed grades CANNOT be dropped!
- Homework must be completed by the due date, and late homework will not be accepted. Moreover, you must complete your homework to be eligible to participate with your team on team work assignments done in class the day a HW assignment is due.
- Most importantly, if you miss a class (excused or unexcused) it is your responsibility to inform your teammates, and to find out from them what your responsibilities are to the team for the next class period. You should also consult the class OAKS page to find out what you missed and what is due for the next class.

Readiness Assurance Tests (RATs)

What is a RAT? Remember that I said that one of the expectations for this class was that you FIRST TRY to learn



on your own. RATs are intended to find out what you have learned from assigned readings or research. RATs are short (5-10 minute) quizzes or activities, done at the start of classes. RATs are intended to reveal, to both you and I, difficulties that you are still having with concepts explored in the reading. They are also intended to help you to deepen your understanding of important biological concepts by engendering discussion on their application to problems we are exploring. **Some RAT's will first be taken**

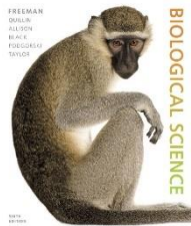
individually, and then in your teams. Therefore you will receive both an individual grade and a team grade on each RAT. Some RATs will be activities done as a team, and may be graded. **If there is a reading assignment for a class...simply anticipate that there will be a RAT!** THERE ARE NO MAKEUPS FOR RATs. The relationship between exams (aka Progress Reports) and RATs are discussed in the next section.

End-of-Problem Progress Reports (aka Exams)

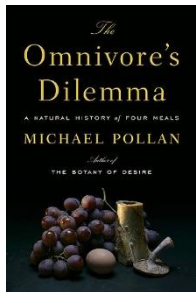
I want to be clear about my purpose for giving “exams” in this course! I do not give exams simply to assign grades, or penalize students for not trying, or as an incentive to “force” you to learn in this course. Instead, it is my hope that the relevant and engaging issues that we explore in the course will motivate you to want to learn. The purpose of the exams is to let you know the extent to which you have mastered the underlying biological concepts that emerge through problem discussions, class activities and lectures, and your ability to apply those concepts to biology-related issues or questions. In short, they are meant to inform you of your learning progress in this course! Since this is their purpose, I refer to these periodic assessments as *Progress Reports*.

RATS-Progress Reports & Concept Mastery – One other function of RATs is to determine if you have mastered (understand and can apply) course concepts. If you demonstrate on the individual portion of the RATs, that you have mastered a concept, you will not be re-assessed on the concept on the progress report. So, progress reports will be tailored to you and what you have mastered over the course.

Make-ups for progress reports (PR) will be given only to students who have documented, legitimate excuses. If you know you are going to miss one ahead of time, contact me before the progress report and we will schedule a make-up. Otherwise, **you must contact me no later than 24 hours after the PR to schedule a make-up**. You must document the absence as excused through student affairs (see Attendance section above).



I do know that we find ourselves in a world in which grades matter to you and are relevant to your future academic and career goals! That is also why there will be many opportunities, prior to progress reports, for you to assess your understanding (RATs, class activities, writing assignments, class discussions etc...). **If you find that you are struggling on these, you have several options:**



1. **Come see me and get extra help...right away!** Best time to come see me is during office hours or make an appointment to see me outside of office hours.
2. **Try going to the Center for Student Learning's Science Tutoring lab.** The CSL, located on the first floor of the library. Visit the CSL website - <http://csl.cofc.edu/>, or call 843.953.5635 for information.

Textbook & Other Readings:

You will be using the same textbook that you used in Biology 111/112 (or 151/152) for this course – *Biological Science 6th Ed. by Freeman et al.* The textbook is ALWAYS your starting resource for the problems/case studies we work on in class. You will be assigned readings from the text which discuss concepts applicable to the problems addressed in the course. The text should also provide instructions for logging on the text's [Mastering Biology](#) web site – an excellent study resource.

We will also be reading *The Omnivore's Dilemma* by Michael Pollan. I have put a copy of the book on reserve at the library. Various on-line book sellers have used and electronic copies that are pretty inexpensive. You might also try the local public library or the Overdrive – an app that allows you access to local library E-books.

Grade Determination

Individual vs. Team Work - The majority of your grade will be determined by work that you do individually (~85-90%); however we will be working in teams extensively during class, so about 10-15% of your grade will be determined by work that you collaborate on with your teammates. Like in Biol 111/112 lab, you will periodically complete peer evaluations which allow you to assess your team members' and your own contribution to the team effort. Remember that team grades can be adjusted (both up or down) based on peer evaluation scores.

| Assessment | % of grade |
|---------------------------------------|------------|
| 3 Progress Reports | 40% |
| Case Study/Problem Assignments | 25% |
| Discussion Labs & Projects | 25% |
| * Participation & Effort | 20% |

**How you can get the full 10% of participation & effort grade:*

- 1. Always come to class, prepared having completed the readings/homework to the best of your ability. Most homework will be graded on effort – the extent to which you tried to incorporate reader/research concepts into your homework.*
- 2. Participate in small group and class discussions by asking, trying to answer questions and constructively/thoughtfully/respectfully challenging ideas presented in class...even those presented by your instructor!*
- 3. Try to use/apply knowledge from homework to complete RATs and other in class activities.*
- 4. Work effectively with your team. This will be assessed using periodic peer evaluations.*
- 5. Read and follow assignment guidelines carefully.*
- 6. Incorporate feedback from me into revisions of your work and later assignments.*
- 7. Come and get help early and often if you find you are struggling!*

Grade Cutoffs

| To earn a(n) | you need... |
|--------------|-------------|
| A | 93.5% |
| A- | 90% |
| B+ | 87.5% |
| B | 83.5% |
| B- | 80% |
| C+ | 77.5% |
| C | 73.5% |
| C- | 70% |
| D+ | 67.5% |
| D | 63.5% |
| D- | 60% |

Honor Code and Academic Integrity

In this class we will, to a large extent, be working in small teams, much like professionals do when they collaborate on projects. The collaborative work we do in this class is meant to encourage you to work together with your teammates to help each other learn. This will require that you share, justify and evaluate the ideas expressed among your teammates. So in short, you are allowed to work together on problem project assignments in this class. Working together means identifying knowledge your team needs to proceed, sharing research knowledge and resources, evaluating each other's ideas/solutions/recommendations & providing constructive feedback to your teammates. However, **each of you must individually write the final problem project assignment**. When you write, the ideas you express will, of course, be a collection of those constructed by your team and supported by background research, but what you write should ultimately be written individually by you and in your own words. Any information, concepts, ideas that you acquire from outside research sources must be summarized/explained in your own words, and appropriately cited (both in a work cited section and parenthetically in the body of the paper). In short, this class will be structured to allow you to work together to form your ideas, but you must ultimately express these ideas in your own words! In fact, I hope you come to realize that the act of expressing and justifying your ideas is learning!

Therefore the following constitutes what is and is not plagiarism in this class. For more information about writing in this class, consult the "Things to Consider When Writing in this Class" in the Research and Writing section of the course OAKS page.

| Plagiarism | NOT Plagiarism! |
|---|--|
| Copying ideas constructed by another member of your team, from the class, or from other students who have taken this class in the past. | Summarize the ideas expressed by team or class members in your own words. Use these ideas to justify your solutions, conclusions or recommendations. |
| Copying (essentially word for word) the ideas (information, findings, analysis, and conclusions) expressed in a research resource (article, web site, textbook) | Summarize the thoughts expressed in the research resource in your own words. Use these ideas to justify your solutions, conclusions or recommendations and cite the source. |
| Summarizing information or ideas expressed in a research resource (i.e. a research article or web site) without citing the source. <u>Without a citation, you are implying that the ideas are yours, when they are not!</u> | Cite your research using APA citation style formatting both parenthetically, and in a Works Cited section at the end of the paper. Citing your sources is <u>always</u> required, unless otherwise specified in the assignment guidelines! |
| Using, in whole or in part, papers written for other classes to write an assignment for this class, without obtaining prior permission from the instructor. | If you have written a paper for another class which relates to a project we are working on, talk with your instructor about what you can and can't use! |
| Quoting – Although not technically plagiarism, it is NOT acceptable in this class to present ideas, concepts, findings, as quoted text... <u>EVEN if you provide a citation.</u> | FIRST - explain information/ideas/concepts/findings that you get from research resources in your own words, and cite the source. Word for word quotes should ONLY be used in this class to support or drive home an idea that you have already constructed in your own words from research or your own findings. |

So, I should remind you that...

Lying, cheating, attempted cheating, and plagiarism are violations of our Honor Code that, when identified, are investigated. Each incident will be examined to determine the degree of deception involved.

Incidents where the instructor determines the student's actions are related more to a misunderstanding will be handled by the instructor. A written intervention designed to help prevent the student from repeating the error will be given to the student. The intervention, submitted by form and signed both by the instructor and the student, will be forwarded to the Dean of Students and placed in the student's file.

Cases of suspected academic dishonesty will be reported directly by the instructor and/or others having knowledge of the incident to the Dean of Students. A student found responsible by the Honor Board for academic dishonesty will receive a XXF in the course, indicating failure of the course due to academic dishonesty. This grade will appear on the student's transcript for two years after which the student may petition for the XX to be expunged. The F is permanent. The student may also be placed on disciplinary probation, suspended (temporary removal) or expelled (permanent removal) from the College by the Honor Board.

Students should be aware that unauthorized collaboration--working together without permission-- is a form of cheating. Unless the instructor specifies that students can work together on an assignment, quiz and/or test, no collaboration during the completion of the assignment is permitted. Other forms of cheating include possessing or using an unauthorized study aid (which could include accessing information via a cell phone or computer), copying from others' exams, fabricating data, and giving unauthorized assistance.

Research conducted and/or papers written for other classes cannot be used in whole or in part for any assignment in this class without obtaining prior permission from the instructor.

Students can find the complete Honor Code and all related processes in the Student Handbook at <http://studentaffairs.cofc.edu/honor-system/studenthandbook/index.php>