EEB 484
Conservation Biology

Spring 2018; TR 9:40-10:55, Tickle Building 402

Instructor
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Graduate Teaching Assistant
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Resources

Textbook:	Kareiva, P., Marvier, M. Conservation Science. Roberts. Copy will go on reserve in library.
Additional readings:	Journal articles and chapters from Sutherland, W.J. 1998. Conservation Science and Action. Wiley-Blackwell. Available freely as an E-book from the UT library.
Additional material:	Course materials and information will be available through Canvas.

Prerequisites
Biology 260 (Ecology) recommended.

If any changes to this syllabus are required as the course evolves and students' interests and learning needs become apparent, we will discuss and agree these together as a class. Any such discussions will take place during scheduled class times and any agreed changes will be announced in class.

Learning outcomes
By the end of the course, if you engage fully with the taught material and opportunities for guided independent study and you participate in class activities, then you should be able
1. to summarize what biodiversity is, what is happening to biodiversity and what arguments have been advanced to support actions to conserve biodiversity.
2. to review critically the evidence attributed to particular drivers of biodiversity declines.
3. to discuss possible strategies for addressing declines in biodiversity, evaluating how they can be deployed most effectively and identifying shortcomings of the different strategies available.
4. to discuss the use of science in different areas of conservation practice.

In addition, the course contributes to the general learning outcomes for Biological Sciences (appended).

Teaching methodology
Content will be introduced and discussed in class. However, class activities are a small fraction of what I expect of students in a 400-level undergraduate class. To do well on course assessments, you will be expected also to read extensively outside class time, to contribute actively to discussions, and to engage with the assignments that are set. Importantly, you will also be expected to reflect on the diversity of teaching activities to arrive at a synthetic interpretation of the material.

Guest speakers will address the class to share practitioners' perspectives on how the science of Conservation Biology relates to real world conservation problems.

Assessment

1. Two mid-terms (~ weeks 7 / 11) and a Final (05/03 08.00-10.00, JTB 402) 40%. These exams will comprise multiple choice, multiple answer and short answer questions. The Final will be comprehensive. These exams will include questions that focus on BOTH the lecture material and the accompanying readings. At least 7 days notice will be given in advance of any test.
2. Coursework essay 25% (~ week 8).
3. Group project 25%. Group projects will be assessed based on a report and presentation and will include a peer assessment component (~ week 14).
4. Contribution to class discussion exercises (10%)

All work will be assigned a score on a 100 point scale and the above percentages used to convert that to an overall percentage score for the course. Typically the various A-grades fall approximately in the 90-100% range, the various B-grades in the 80-90% range, and so on with specific cut-offs reflecting the different grade categories used for undergraduate and graduate students. If appropriate, normalization across the different assessment activities will be used to ensure they are of commensurate difficulty (e.g. to allow lower cut-offs to be set on the exams).

Additional details:

1. You will be expected to participate in additional class activities that may provide opportunities for formative assessment to enhance your learning but will not count towards your final grade.

2. Class is a shared learning environment and you will be asked to adhere to some "ground-rules" in class to respect other students' learning and to enable the Instructor to use particular teaching methods. These include arriving promptly to class, bringing a scientific calculator or similar, switching cell phones off and refraining from texting during class, not listening to iPods, MP3 players and similar during class, not being online in class unless it is as part of an assigned class activity, and not posting materials provided to you in class on other web-sites.

3. Coursework, group project reports or summaries: late submissions will be penalized at 10% per business day if there is no prior arrangement or proof of emergency. All written, submitted work should be word processed, spell-checked and presented clearly. Word limits will be specified and work that is overly long may be penalized.

4. Academic Honesty: The course follows UT's Honor Statement, thus all work taken from another source must be documented and any work you turn in that is not documented, must be your own. By enrolling in the course for credit, you agree that written work may be examined using plagiarism detection software.

5. Disability Services: Any student who feels he or she may need an accommodation based on the impact of a disability should contact the Office of Disability Services (ODS) at 865-974-6087 in 100 Dunford Hall to document their eligibility for services. ODS will work with students and faculty to coordinate accommodations for students with documented disabilities.

Topics
The core content of the course will progress through

What is biodiversity and what is happening to it?

- What is Conservation Biology?
- What is / where is biodiversity?
- Measuring biodiversity
- What is happening to biodiversity? The extinction crisis
  Why should society care? Arguments for biodiversity conservation. Ecosystem services.

Why is that happening? Leading threats to biodiversity.

- Human population growth and consumption patterns
- Habitat destruction and fragmentation

Test 1 covers material up to here (~ Week 7)

- Invasive species
- Overharvesting
- Climate change
- Changing biogeochemistry
- Challenges faced by small populations

Test 2 covers material up to here (~ Week 11)

Conservation strategies

- Prioritization: where to work (hotspots), what element of the biota to focus on (phylogenetic contrasts when ranking threats to species), what actions to take (matrix models)
- Institutions active in conservation
- Conservation legislation (US Endangered Species Act)
- Protected areas
- Beyond protected areas: corridors and private land conservation
- Restoration ecology
- Ex situ conservation

General Learning Outcomes for Biological Sciences

Students seeking a degree in Biological Sciences (whether the concentration is in Biochemistry, Cellular, and Molecular Biology, Ecology and Evolutionary Biology, or Microbiology) are expected to be able to do the following by the time they graduate:

Explain and provide examples of each the five big ideas in Biology, using their knowledge of biological concepts gained from their course of study:

- **Evolution**: Populations of organisms and their cellular components have changed over time through both selective and non-selective evolutionary processes.
- **Structure and Function**: All living systems (organisms, ecosystems, etc.) are made of structural components whose arrangement determines the function of the systems.
- **Information Flow and Storage**: Information (DNA, for example) and signals are used and exchanged within and among organisms to direct their functioning.
- **Transformations of Energy and Matter**: All living things acquire, use, and release and cycle matter and energy for cellular / organismal functioning.
- **Systems**: Living systems are interconnected, and they interact and influence each other on multiple levels.

Demonstrate the ability to perform the following five scientific practices:

- Link lecture topics and synthesize information, particularly in reference to the five big ideas
- Develop hypotheses and predictions (ask scientific questions) based on models or data
- Interpret scientific representations, such as graphs, phylogenies, or molecular structures, or data, and come to a conclusion (with evidence)
- Summarize information from scientific articles or other sources
- Predict the consequences of changes to systems or pathways