Biology 455: Conservation Biology (4cr)
Monday & Wednesday 12:30-1:45 ISC 137
Lab Monday 2:00-4:50 ISC 107
FALL 2024

Instructor: Kristina Hannam, Ph.D. (she/her/hers)
Office: 259 ISC
Email: hannam@geneseo.edu
Office Hours : Tues, 1:30-2:30pm; Weds 2:00-3:00 in ISC 259 and Thurs 4:00-5:00 in ISC 232; or by appointment
Walk with Me appointment: sign up on Google Calendar to walk and talk Tues 2:30-3pm or Weds 3:00-3:30

Text: Shur, Anna. 2022. Introduction to Conservation Biology. 3rd edition. Sinauer Associates. Available as an ebook for students : https://global.oup.com/academic/product/an-introduction-to-conservation-biology-9780197564370?cc=us&lang=en&
Plus additional readings posted on Brightspace & Google Drive

Learning Outcomes:

Upon completion of this course students will:

1. Describe spatial distribution of biodiversity, the human threats to biodiversity and how these interact with population/community dynamics to enhance the threat of extinction.
2. Explain the theories/ideas that underlie selected current conservation and management practices in North America and around the world, and recognize the complexity that different social/cultural priorities add to conservation issues
3. Apply understanding of threats to biodiversity and conservation theory to develop conservation plans to selected problems in case studies.
4. Evaluate, discuss, and critique articles on conservation topics by developing questions and actively participating in evaluations of selected articles in class.
5. Create a written research proposal by identifying a question or problem, selecting appropriate background sources, and developing appropriate tests or management plans. Students will also critically evaluate the proposals of other students.
6. Cooperate with classmates in an applied conservation project at an off-campus site. Students will participate in collection of field data, analysis and report preparation. Students should expect to work independently or in small groups, and engage in professional interaction with and reporting to representatives of local conservation organizations (eg. DEC, NY State Parks, Land Trusts). This will provide students the opportunity to fulfill the IAL requirements of: Integrating multiple bodies of knowledge with their personal experience by asking meaningful questions about real-world problems. Applying skills, theories, and methods gained in academic study, professional

experiences, and/or co-curricular experiences to new situations. And reflecting upon changes in their learning and outlook over time, and integrate into their future endeavors based on that self-reflection

By completing this course you will also fulfill learning outcomes associated with the College Core (GLOBE):

Scientific Reasoning

Students will demonstrate scientific reasoning applied to the natural world, including

- an understanding of the methods scientists use to explore natural phenomena, including observation, hypothesis development, measurement and data collection, experimentation, evaluation of evidence, and employment of data analysis or mathematical modeling; and
- application of scientific data, concepts, and models in one of the natural (or physical) sciences

Sustainability

Students will be able to

- identify and analyze major sustainability challenges and solutions at local to global scales;
- understand the interactions between political, economic, socio-cultural, and environmental systems;
- understand the roles of power, influence, and inequity in sustainability.

Written and Oral Communication in the Major

Within a discipline and at an advanced level, students will be able to

- research at topic, develop and argument, and organize supporting details;
- demonstrate coherent college-level communication (written and oral) that informs, persuades, or otherwise engages with an audience;
- evaluate communication for substance, bias, and intended effect; and
- demonstrate the ability to revise and improve written and oral communication.

Integrative and Applied Learning

Students will be able to:

- Integrate multiple bodies of knowledge with their personal experience by asking meaningful questions about real-world problems
- Apply skills, theories, and methods gained in academic study, professional experiences, and/or co-curricular experiences to new situations
- Reflect upon changes in their learning and outlook over time, and integrate into their future endeavors based on that self-reflection

Semester Schedule (Schedule is subject to change):

Conservation Biology Schedule:

Generally: Mondays class meetings have lectures or lab preparation; Wednesday meetings have lecture and case studies/activities and discussions. Topics for each week align with the textbook chapters or other readings associated with the focus for that week. Specific reading assignments will be posted weekly on Brightspace.

Week 1: **(Aug 25/27)**: A History of Conservation Biology & Ways of Knowing (**Shur Chapter 1 and Brightspace readings)**

Lab: Field Journaling

Service Learning Project & Community Partner Orientation **(class visitors from the GVC on 8/27)**

Week 2: **(Sept 3)** – No class/Lab meeting Monday **(Shur Chapter 2)**

Preparing for Service Learning Fieldwork on Sept 3

Week 3: **(Sept 8/10)** Describing Biodiversity **(Shur Chapter 2)**

Lab: Initial Field Visit with Nature Journaling and Data Collection Techniques

Week 4: **(Sept 15/17)** Biodiversity: How much is there? Where is it found? What is its History?

Lab: Service Learning Site Visit & Data Collection

Week 5: **(Sept 22/24)** Biodiversity (Con't) + Ecosystem Services **(Shur Chapter 3)**

Lab: Service Learning Site Visit & Data Collection

Week 6: **(Sept 29/Oct 1)** Habitat Destruction **(Shur Chapter 4)**

Lab: Service Learning Site Visit

Week 7 – **(Oct 6/8)** Habitat Fragmentation, Destruction, Degradation (Lago Guri case study)

Lab: Service Learning Site Visit/Data Analysis + Nature Journal Reviews & Feedback

Week 8 **(Oct 15)**: **Exam 1**

Lab: NO LAB (Fall Break)

Week 9: (Oct 20/22) Overharvesting & Invasive Species (Shur Chapter 5)

Lab: Service Learning Project Data Analysis + Research Proposal

Week 10: (Oct 27/29) Extinctions (Shur Chapter 6)

Lab: Service Learning Project Data Analysis – Report Progress

Week 11: (Nov 3/5) Genetic and Population Ecology applied to Conservation (Shur Chapter 7)

Lab: Research Proposal Work

Week 12: (Nov 10/12) Conservation Planning – New Populations & Ex Situ (Shur Chapter 8 & 11)

Lab: Mapping species' current and predicted presence and designing a multi-species Marine Reserve (Using Open-Source Data in Correlative Species Distribution Modeling of Marine Species)

Week 13: (Nov 17/19) Conservation Planning – Design & Success of Protected Areas (Shur Chapter 9 & 10)

Lab: Modeling Suitable Habitat For A Species Of Conservation Concern: An Introduction To Spatial Analysis With QGIS (NCEP activity)

Week 14: **(Nov 24) <u>In-person Attendance is important and expected on Nov 24</u>**

Lab: Service Learning Project Group Work Wrap-Up

Week 15: (Dec 1/3) **Exam 2** & Wrap Up

EXAM 2 – Dec 1

Lab: Research Proposal Reviews

Week 16: **(Dec 8)** Final Prep for Presentation to Service Learning Partner + Reflections & Resumes

Week 16 **(FINAL EXAM DEC 11)**: Final Oral Presentation and Delivery of Report with Management Recommendations to Service Learning Partner & Individual Research Proposal Due

Grading:

Your grade in this course will be based on the following exams and assignments:

Lab and Service Learning Project 25% of grade includes engagement & participation in field trips, contributions to group work (data collection in the field & in the lab, report write-ups, idea cultivation, report presentation), lab activities & assignments

Field Journal Assignment: 10%

In-class work: 25% of grade Question/Activity of the Day, participation in-class or in online discussions & Case studies

Research Proposal: 15%

Exams: 25%

Final grades will be assigned according to the following distribution: >93%, A; 90-93%, A-; 87-89%, B+; 83-86%, B; 80-82%, B-; 77-79%, C+; 73-77%, C; 70-72%,C-; 60-69%, D; <60%, E. Under most circumstances, there will be no adjustment to your grades or the grading scale.

Don't be fooled, this is a *reading & writing-intensive* course that requires a lot of work both in and <u>*out of class.*</u>

Important Dates (Write these into your personal calendar):
Service Learning Project Field Work: Sept 8, 15, 22, 29, Oct 6
Nature Journals set #1 due Oct 8, Reflection Due Oct 10
Exam 1 Oct 15
Research Proposal Topic Due Oct 20
Research Proposal Annotated Bibliography Nov 5
Research Proposal Draft Due Nov 19
Research Proposal Panel Reviews Nov 24
Exam 2 Dec 1
Nature Journals # 2 due Dec 3
Reflection #2 due Dec 5
Final Exam Period Dec 11

Exams (25% of grade)

Two exams – each exam consists of two essay questions. Students will be provided with 10 essay topic options and figures from lecture/text that could be used in support of arguments for those essays. On the day of the exam, each student will be randomly assigned two essays to complete in class. Each student will be assigned different combinations of essays.

Field Journals & Reflections (10% of final grade)

Students will be required to find a dedicated "sit-spot" in a natural area that they visit once/week. During that visit, students will make detailed observations and record those observations in their journal. Students are also expected to carry their journal to our service learning field site and record observations in their journal at that site as well. Weekly entries will be checked periodically by Dr. Hannam (either journals will be brought to lab, or pages uploaded to Brightspace at Dr. Hannam's discretion), and at 2 points during the semester, students will write reflections based on their field notebook entries, course readings, activities and discussions.

Class work and assignments including categories below (25% of final grade)

Case Studies

Students will work individually or in groups (as assigned by the instructor) during the semester on case studies (see semester schedule) and other in-class work and assignments. The instructor will announce details for each assignment. Some of these case studies and assignments may require work outside of class. Each of these case studies will have a short written assignment that must be handed in (usually online). All will be graded for completeness (0 for not turned in, 5 for incomplete or low-quality, or 10 for high quality & complete), and 3 will be graded more closely (on a 1-10 scale).

Class Discussions

Article Discussions: We will have (almost) weekly article discussions over the course of the semester during each module. Articles may be peer-reviewed journal articles or science articles written for the general public that highlight issues related to our weekly themes. Some discussions will be in class, and students may be assigned to lead discussions. Other discussions may be online. All students are expected to contribute to article discussions.

Students should expect to see questions about these articles on the exams.

Question/Activity of the Day, Attendance & Class Participation

10points/week – <u>You are expected to be in class every day</u>. Your score is based on contribution to class discussions & my assessment of your engagement in the class activities and case studies.

Service Learning Project and Lab Assignments (25% of final grade)

One credit of this 4 credit course is based on a service-learning project that the class will complete as a group in support of the local land trust for a large portion of the lab. This project will involve completion of background readings/research, collection of data in the field, design and writing of the final materials for the land trust, and presentation of a final report to the class and to the GVC. Your contribution to this project requires your attendance in class and lab participation, both in the field, and during classroom work on the project. Successful completion of this project will require excellent teamwork (as evaluated by Dr. Hannam and your peers), and satisfaction of our client, the land trust. A final reflection on your service learning experience, and application of demonstrated skills to your resume will conclude this experience.

Weeks of lab not dedicated to the service-learning project will involve other in-lab activities to support the development of your research proposal and to learn some techniques used to assess data by conservation biologists. There will typically be a short writing assignment associated with each of the lab day activities.

Research Proposal (15% of final grade)

A 6-8 page research proposal will be required from each student in the course. The paper will be based on the student's reading, analysis and synthesis of the primary literature and development of a research proposal in which the student proposes an experiment or study. The proposal may be on any topic within the field of conservation biology. The assignment has multiple components with due dates throughout the semester – please pay attention to these dates on the Brightspace syllabus/assignment sheet. Additional guidelines will be distributed via Brightspace and in class. **A Student MUST pass the proposal assignment in order to pass the class and receive credit for this class **

Late work and Make-up work

In the Brightspace Dropboxes for most assignments you will find that the due date/time may be later than the closing date/time. That means it is possible to submit late work (after the due date/time) up until the closing date/time. Late work is typically penalized -10% for each day late, and the penalty may be assessed proportionally by time.

If you believe you have a valid excuse (illness or other extenuating circumstance) for late work, or need make-up work, you must contact Dr. Hannam as soon as possible, and before the end date of the module in which the work is due. Dr. Hannam will work with each student individually to determine the best solution to the missed deadline.

Backing up your work

Most of your assignments will be turned in by uploading them to Brightspace. The servers that Brightspace uses are robust, but in the past there have occasionally been issues with incomplete uploads or unopenable/corrupt uploaded files. When this happens, I am unable to grade those assignments. In these situations I typically give students a time window to re-submit that assignment before it is converted to a 0 (zero). For this reason, I expect that you will keep an electronic backup of all assignments submitted for this course until your final grade is assigned.

Speaking from personal experience (including the loss of my dissertation files within a month of when they were due), I strongly recommend regularly backing up your course files. CIT recommends backup BOTH an external hard drive configured for automatic backup and the Google Drive File Stream app configured to sync with the student's campus account.

Communication with the Instructor

The best way to communicate with Dr. Hannam is in person or via Geneseo email (hannam@geneseo.edu). Dr. Hannam will make every effort to respond to messages sent to her during the workday by 5pm the same day. However, be aware that Dr. Hannam checks messages in batches 2-3 times/day, so may not respond immediately even during the workday. Emails sent after 5pm may not be answered until the following workday depending on Dr. Hannam's schedule outside of work. And Dr. Hannam typically takes one day/week off from work (usually Saturdays), and checks email on Sundays only sporadically.

Accommodations

SUNY Geneseo will make reasonable accommodations for persons with documented physical, emotional, or cognitive disabilities. Accommodations will also be made for medical conditions related to pregnancy or parenting. Students should contact Dean in the Office of Disability Services (tbuggieh@geneseo.edu or 585-245-5112) and their faculty to discuss needed accommodations as early as possible in the semester.

Academic Dishonesty

SUNY-Geneseo's policies on academic dishonesty are summarized in the Code of Student Conduct found in the Geneseo Undergraduate Bulletin online. Plagiarism and other forms of academic cheating are prohibited and may

result in a zero on an assignment or exam. Plagiarism and cheating will be reported first to the departmental office, and may be referred to the Campus Judicial Council. Repeated incidents will result in failure of the course. Exams and term papers will be checked for plagiarism. If you have any questions about what constitutes academic dishonesty please contact the instructor.

Taking Care of Your Mental Health

The Biology major is demanding, and as your instructor I try to keep in mind that mine is not the only course you are taking, and that most of you also have other demands on your time and attention in addition to your coursework. Juggling your many responsibilities can have an impact on your mental health. With this in mind, I realize that diminished mental health, including significant stress, mood changes, excessive worry, or problems with eating and/or sleeping can interfere with optimal academic performance. The source of symptoms might be strictly related to your course work; if so, please make an appointment to speak with me one-on-one. I realize problems with relationships, family worries, loss, or a personal struggle or crisis can also contribute to decreased academic performance.

SUNY Geneseo provides mental health services to support the academic success of students. Counseling Services, a part of the Lauderdale Center for Student Health & Counseling, offers free, confidential psychological services to help you manage personal challenges that may threaten your well-being and success here in college.

In the event I suspect you need additional support, I will express my concerns and the reasons for them, and remind you of resources (e.g., Counseling Services, Career Services, Dean of Students, etc.) that might be helpful to you. It is not my intention to know the details of what might be bothering you, but simply to let you know I am concerned and that help, if needed, is available.

Getting help is a smart and courageous thing to do -- for yourself and for those who care about you.

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