BI328

CONSERVATION BIOLOGY

Fall 2020

SYLLABUS

COURSE DETAILS

Instructor: Shannon J. O'Leary
Office: GOUL2321
Email: shannon.j.oleary@gmail.com
Slack and email are the best ways to contact me. I attempt to respond to all course-related messages w/in 24 hrs. If I don't respond within that time frame, send a follow-up to make sure your message didn't get lost!

Office hours: Monday, Tuesday, Friday 11:30am – 1pm or by appointment

Lectures: Mondays/Wednesdays/Fridays 10:20 – 11:10am (GOUL3102)

Lab: Wednesdays 1:30 – 4:30pm (GOUL3102)

Course site: https://bi328.netlify.app

COURSE OBJECTIVES

After completing this course, you should be able to

(1) Describe what biodiversity is, how we measure levels of biodiversity, and the value thereof.
(2) Explain the patterns and processes leading to the observed ongoing, drastic decline in biodiversity.
(3) Apply fundamental principles from a variety of fields, including ecology, genetics, systematics, toxicology, economics, and creative problem-solving to management and conservation of biodiversity.
(4) Apply the theoretical framework, field, lab, and computational techniques to current management and conservation concerns, including
    a. Being able to evaluate sources/content of information.
    b. Gaining an overview of commonly used techniques to monitor biodiversity.
    c. Understanding how large data sets & modeling can be used to enable sound conservation/management decision-making.

COURSE CONTENT (SCHEDULE)

WEEK		DAY	LECTURE TOPIC *	CHAPTER(S)**
1	8/19/2020	W	Introduction to Conservation Biology	2
			BIODIVERSITY: CONCEPTS, MEASURES, PATTERNS	
		F	Rise & Fall of Biodiversity	1
2	8/24/2020	M	Biodiversity & Biocomplexity	3, 4
		W	Ecosystem Diversity	3, 4
		F	Species Diversity	3, 4
3	8/31/2020	M	Genetic Diversity	3, 4
			THE VALUE OF BIODIVERSITY	
		W	Value Systems	5
		F	Ecosystem Services & Economics of Biodiversity I	6
due 9/4 by midnight: Topics for case studies/term paper				
4	9/7/2020	M	Ecosystem Services & Economics of Biodiversity II	6,7
		W	Ecosystem Services & Economics of Biodiversity III	6,7
		F	**MIDTERM**	
			THE BIODIVERSITY CRISIS	
5	9/14/2020	M	Loss of Biodiversity: Extinction Risks & Drivers	8
		W	Habitat Loss, Fragmentation & Degradation	9
		F	Pollution	9
6	9/21/2020	M	Overexploitation	10
		W	Fisheries Management & Aquaculture	
		F	Invasive species	11
7	9/28/2020	M	Climate change	12
		W	Tipping Points, Resilience & Persistence	
		F	Biodiversity status quo	
			MAINTAINING, CONSERVING, AND RESTORING BIODIVERSITY	
8	10/5/2020	M	Species/population-level conservation I	13
due 10/5 by midnight: Outline/annotated bibliography				
		W	Species/population-level conservation II	13
		F	**MIDTERM**	
9	10/12/2020	M	Species/population-level conservation III	13
		W	Ex situ Conservation	16
		F	Wildlife forensics & Wildlife trade	
10	10/19/2020	M	Conservation Genetics I	
		W	Conservation Genetics II	
		F	Conservation Genetics III	
11	10/26/2020	M	Conservation Genetics IV	
		W	Essential Habitats & Ecosystem-based management	15
		F	**MIDTERM**	
12	11/2/2020	M	Managing & Restoring Ecosystems	
		W	Managing & Restoring Ecosystems	14, 15
		F	Protected Areas/Networks	
13	11/9/2020	M	Marine Protected Areas	14, 15
		W	Resource Management	
		F	Politics & Policy/domestic & international	
14	11/16/2020	M	Sustainable Development	16
		W	Ecopragmatism/Ecomodernism	
		F	The final word	
due 11/23 by midnight: Term paper				

*Lecture topic/sequence may be adjusted

** additional reading assignments will be posted – check our course site regularly.

COURSE TOOLS & MATERIALS

Textbook:

Cardinale, Primack & Murdoch. 2019. Conservation Biology.

Additional assigned readings:

Reading broadly is a great habit to acquire. You will be assigned additional scientific papers, articles, and other materials to read and watch. I will make PDFs and/or links available to you in the reading assignment section on our course site. If you have difficulties accessing the please let me know in real time so we can fix that issue *before* you will be expected to have read it.

Notes, Lecture slides, and Question Catalogue

In general, a version of the lecture or an outline will be made available before class. This is ***not*** an adequate replacement for a complete set of notes, rather they are meant to give you a framework to assist in your notetaking. In addition, ***after*** each lecture topic I will post a set of "re-cap questions" that summarize the material discussed to help you study; they essentially form a question catalog for the midterms. These are not graded quizzes – but they will be most useful to you if you work through them soon to stay on top of the material and engage with it while the material is still fresh in your mind. It will also help you figure out if you need to drop by office hours to go over any of the material that is still unclear.

Slack channel

We will use a slack channel as our primary platform for communication and announcements to avoid lengthy, confusing email chains and facilitate communication amongst yourselves. Best case scenario, we are going to have a memorable semester, worst case we may have to pivot our course format and go remote. It is always important to communicate issues as they come up while we still have time to get back on track rather – for this semester it will be even more critical that we be pro-active in our communication. We will also use Slack for some of our assignments. It will be up to you how you choose to manage notifications, but I expect you to check regularly for reminders, announcements, etc. We will install, set up, and familiarize ourselves with slack together.

Canvas Site

We will use the Canvas site primarily to submit assignments and communicate grades.

Lab manual

The lab manual will be available at the beginning of each week as needed. For the most part an electronic copy (on a laptop or tablet) is sufficient, at times you may be instructed to print a data or worksheet for lab.

BYOD: Bring your own device (to lab)

You are **required** to bring your laptop for use during lab; a tablet will not be sufficient to participate though you are welcome to bring a tablet to have an extra screen to follow along an electronic version of the lab manual or an exercise we are working on. Make sure to have a power cable and/or fully charged battery!

R and Rstudio

There is a discernable shift in Conservation Biology towards leveraging large data sets and incorporating modeling – we will do the same during various labs! We will primarily use R for our data analysis and to produce figures and reports. You will need to install R and Rstudio on your laptop – but we will do this together during lab.

ASSIGNMENTS & GRADES

Road to success

Come prepared: Read relevant textbook chapters and assigned readings *before* class; be familiar with content, have an idea of hazy/difficult concepts and identify knowledge gaps (Accountability mechanism: Reading reflections).

Be present & focused: Engage with the material, take notes, ask questions, participate in discussions. Participating might mean speaking up more than you are usually comfortable with so challenge yourself to go outside your comfort zone – which for some of us might mean listening more.

Debrief: Figure out what wasn't clear and follow up as quickly as possible at beginning of next class, via slack/office hours, or talk to your classmates (Accountability mechanism: Lecture Debrief).

Review: Work through the re-cap questions, find a study buddy/group, come to Q&A sessions, and make use of office hours (Accountability mechanism: Re-cap questions, Exams).

Plan ahead & manage your time: I realize this is not your only class (it might not even be your "most important" class), so I will do my best to clearly communicate deadlines and expectations to help you with your time management. Keep track of due dates, block of regular time blocks for reading/review/lab homework and anticipate deadlines. If this is something you struggle with, I am happy to help you explore some time management techniques that work for you.

Grades

Your final grade will be based on the following **COMPONENTS** (see below for details on each category):

Exams	Midterm 1	30* or lowest scoring midterm
(Letter grades)	Midterm 2	40
	Midterm 3	40
	Final	60
Assignments	Case Study I	20
(Letter grades)	Case Study II	20
	Case Study III	20
	Term Paper	75
Participation	Lecture debriefs	15
(Check system)	Conservation IRL	25
	Reading Reflections	50
	In-class discussions	15
	Annotated bibliography	10
Lab	Homework	125
(Check system)	Participation	20

GRADING SCALE:

We will be using two grade scales for different components. The check system is essentially a pass/fail or completion-based system creating a set of assignments that are low-stakes but frequent. The final points achieve for weekly assignments are based on the mean percent for each individual assignment. Your final grade for the course based on the proportion of points accumulated over the course of the semester will be a letter grade.

Letter grades:

Grade	*Percent*
A	93 – 100
A-	90 – 92
B+	87 – 89
B	83 – 86
B-	80 – 82
C+	77 – 79
C	73 – 76
C-	70 – 72
D+	67 – 69
D	63 – 66
D-	60 – 62
F	< 60

Check system: (3-scale grading)

Grade	*Percent*
✔ (+)	110: assignment is 100% complete, all tasks completed, all answers correct, exceptional work (rare).
✔	100: assignment is complete, all tasks have been attempted, most are correct (expected).
✔ (-)	60: assignment is < 80% complete, most answers incorrect (ideally rare).

Class & Lab Participation

IN-CLASS DISCUSSIONS (DURING EACH LECTURE & LAB)

You are not expected to have all the right answers, sometimes it's more important to learn how to ask the right questions and sometimes you learn more from a wrong answer. You are expected to come to class prepared (i.e. do the readings) and to be willing to engage in discussions, answer, and ask questions.

LECTURE DEBRIEF (AFTER EACH LECTURE)

This assignment is meant to be a quick reflection on the material covered during class to help me assess where everyone is at and to help you follow up. You'll answer these four questions (very, very) briefly.

- What was the most muddy concept(s)? Do we need to further clarify?
- What was the exciting, interesting, or a new concept you learned?
- Was there any "assumed background knowledge" you didn't have? Do we need to further clarify?
- Any additional general comments or questions on todays lecture or this week's lab?

Due by 3pm the day *after* lecture. We will decide as a class if we want to share these with the whole class or if you are more comfortable submitting them privately. No late work will be accepted or receive credit.

"CONSERVATION IRL" (WEEKLY)

It is important to learn to make connections between the topics and concepts we cover during class and the real world. You will find that once you are aware of it that you encounter "Conservation Biology" all.

the. time. For this weekly assignment you will share one of these encounters in 5-10 sentences with the class using our slack channel. This could be a podcast you listened to, an interesting documentary you watched, an article or essay in the news, a conversation you had with somebody in person or on social media, ... It does not have to be a "positive" encounter – this could also be a statement you came across that you think is incorrect or a position you disagree with. Whenever possible post a link for everyone who is interested to be able to follow up. Here are a few prompts to guide your post:

- Give a concise 1 – 2 sentence summary or state the main point that stuck out to you.
- How does it connect to our class?
- What did you find helpful?
- What new thing did you learn?
- Is there a question that came up you would like to clarify?
- Was there some information you found unsettling? Did something seem incorrect?
- Was your encounter extremely biased in a certain direction?

Due by Sunday 5pm each week though you are encouraged to post at any time during the week. If you post an initial 'Conservation IRL' by Aug 23rd (first half week of classes) you may cash that freebie in later that semester if needed, otherwise no late work will be accepted or receive credit.

Reading Reflections (weekly)

You should be reading assigned chapters and other materials *before* each lectures. Check our course site for the most upcoming readings to make sure you are not missing any. Readings will be assigned at least one week in advance. The reading reflections should be about 500 words (no less than 300 words), try not to go over 750 words (be concise). This is assignment is supposed to help me gauge what you are getting out of the readings and to help you hold yourself accountable to actually engage with the material. A good way to approach this is to take notes while your read, then summarize those – this will help you pull out the most important information. Remember, our final is cumulative and open book, so good note-keeping will pay off down the line.

For book chapters, review articles or reports a good starting point is to list the three to five most important concepts and/or major conclusions, and if appropriate relevant case studies supporting those. For research articles drawing out the central hypothesis being tested, or question asked, what type of data set was generated to answer the question, and key results/major conclusions. In all cases, you will want to list statements that were unclear, that you have questions about or disagree with, or flaws you see in the line of argument.

Due by Friday 5pm each week (covering that week's readings). No late work will be accepted or receive credit. The first reading reflection is due Aug. 28th covering assigned readings for Aug. 24th – 28th).

"Lab homework/reports" (weekly)

You will be receiving lab homework in some format almost every lab. Make sure you start early enough to get help if necessary.

Due by the following Wednesday 12pm unless otherwise specified. No late or incomplete homework will be accepted or receive credit.

Exams

Exams will consist of short answer and essay questions unless otherwise specified. Material to be covered in each exam will be discussed in class prior to the exam. The midterms will not be cumulative, though some content will connect to material not explicitly covered in the exam. The final will be cumulative and open book. In general, I will schedule Q&A sessions before the exam; though it is expected that you work through the material beforehand and come prepared with additional questions you have. Makeup exams will be given at my discretion and are generally only allowed for medical emergencies. It is your responsibility to contact me within 48 hours of the missed exam to make arrangements; ideally contact me as soon as you realize you will not be at the exam. The use of cell phones, tablets, and other electronic devices is strictly prohibited during the midterms and will result in zero credit.

Writing assignments & presentations

ANNOTATED BIBLIOGRAPHY (OVER COURSE OF SEMESTER)

Over the course of the semester you will maintain an annotated bibliography as a "living document" (i.e. update it as you go) to help you keep track of materials outside of our textbook, i.e. your readings for lectures, labs, articles you shared for the "conservation IRL" assignment, and resources for your conservation biology case studies and term paper. You may choose to format it alphabetically, topically, or by categories of assignments, whichever suits you best as long it is organized – the final exam is open book so this could be an important resource for you. Format all your sources in a consistent, standard format and include 3 – 5 key points for each.

CONSERVATION BIOLOGY CASE STUDY (3X SEMESTER)

Over the course of the semester you will dig into three case studies. For at least one of these you will write an approximately 750-word summary and at least one will be an in-person 10-minute presentation; format for the third one is dealers choice (in this scenario, you are the dealer). At least one case study should detail strategies taken to conserve an endangered species or ecosystem, other topics may include specific pieces of legislation, biography of a scientist, or a personal experience (e.g. internship or research project); out of the box ideas welcome – but clear them with me first. At least one of your case studies should focus on an article of your choosing from the primary literature, for others you can pull from multiple, reliable sources, including grey and secondary literature. See guidelines for details. We will set deadlines/presentation dates after choosing topics/formats along with topic for term paper.

TERM PAPER (OVER COURSE OF SEMESTER)

If I gave you $1 billion to invest in conservation – how would you spend it and why? You have all semester to come up with an answer. There will be three deadlines to help you spread out the work across the semester, first you will work through a small assignment to help you choose your topic, then you will hand in an outline + annotated bibliography, and finally your term paper (approx. 2,500 words). We will discuss details in person, and I will make detailed guidelines available.

Due dates are 9/4 (topics), 10/5 (outline + annotated bibliography), 11/23 (term paper).

COURSE POLICIES

Be curious. Be kind. Be on time. Do the work. Don't cheat.

Class conduct & expectations

Free discussion, inquiry, and expression is encouraged in this class. Let's strive towards conversations and interactions that are edifying, inclusive, and respectful of each other. This includes listening to and learning from each other and challenging ideas, not persons. Discussions are always a time to pursue interesting questions, sharpen our knowledge, and refine ideas – they are never a time to demean or devalue others. Behavior that interferes with my ability to conduct the class/lab or your classmates ability to benefit from the class is not acceptable, this includes things like routinely entering class late/leaving early, distracting use of devices, talking while I am lecturing or your classmates are asking/answering questions, or participating in a way that is perceived as overtly aggressive or offensive.

Attendance

Attendance is ***mandatory***. That being said, we are in for an (at best) unusual semester and will need to be flexible. If you are experiencing any symptoms or have potentially been exposed to Covid-19 and are needing to miss class in-person please contact me immediately – ideally before class/lab so we can figure out how best ensure that you can participate and/or catch up on the necessary work. We will handle this on case-by-case basis. If you know that you are going to need to miss class for other acceptable reasons (e.g. observance of a religious holiday) be pro-active in your communication so we can accommodate.

Participation

Engage and participate in the class. Ideally ask, comment on, and answer questions; you might prefer 'participation' as staying focused and quietly processing – that's cool, too. In addition to in-class discussions, there are weekly assignments for slack-based discussion to help you engage with the material and help me assess where everybody is at. The more you engage with the material, the more you will get out of the class (and the more fun all of us will have), so I am going to challenge you to step outside your comfort zone in the safety of a small class.

Technology use

Technology is becoming an increasingly integral part of our life; it is important to learn to use technology responsibly. Think of class/lab as a time to be deliberate in your use of technology. Here are some guidelines that I think will be helpful for you to stay focused on class and minimize distractions for you and others (this includes me).

- Ditch the phone. Leave it in your bag. Charge it, whatever … Class and lab times serve a distinct purpose – be present and respectful of the rest of us.

- You are strongly encouraged to stick to paper and pen (or pencils) for taking notes. I am happy to chat about note-taking techniques if that's something you would like to become more adept at. Some of you may find laptops and tablets useful or even vital for note taking, following slides, etc. that's fine – but please refrain from surfing the web, social media, online shopping etc. Even if you swear it's not distracting you for you, it likely is distracting somebody else (you'd be surprised how easy it is to see your screen and follow the action).

Academic honesty

Any form of cheating, whether on exams, or in the form of plagiarism on written assignments and projects will not be tolerated. You are expected to properly cite the sources in your assignments. The College's official definitions can be found in the Student Handbook. The consequences of violating this policy range from the assignment of zero points for an exam or paper, up to assignment of a failing grade for the course.

Accessibility

Saint Anselm College is committed to meeting the needs of students with documented physical, sensory, psychiatric, and learning disabilities. To disclose a disability and request academic accommodations, please email or call Kenneth Walker, who will assist you in making contact with faculty members and/or arranging support services and accommodations available within the Academic Resource Center (ARC) and elsewhere. To ensure that accommodations are arranged in a timely manner, you are encouraged to make your request at the beginning of each semester.

For questions concerning support services, documentation guidelines, or disability:

Academic Resource Center (ARC)
Kenneth J. Walker, Director
Jean Student Center Complex, Top Floor
Tel. (603) 641-7193
kwalker@anselm.edu

Additional information on documentation guidelines:
https://www.anselm.edu/academics/academic-resources/disability-services