



I. Course and Instructor

Course Title: SUS-4100 Conservation Biology 23/Spring

Course Code: SUS-4100-DL01: 40272

Credits: 4

Prerequisites: Prior completion of SUS-3100 with a grade of C- or higher, or instructor permission

Semester: Spring 2023

[Format](#): Classroom (In-Person, Lecture and Laboratory)

Meeting Days & Times: Tuesday/Thursday 3:30-5:00pm, Thursday 5:00-5:50pm

Location: Dillon 203

Start Date: 1/17/2023

End Date: 5/2/2023

Refund Date: 2/2/2023

Withdraw Date: 4/10/23

No Show Attendance Reporting Date: 1/25/2023

No Show Attendance Reporting is based on your attendance and engagement. If you are a No Show, you may be dropped from the course and this may impact your financial aid. Go to the [No Show Attendance Reporting website](#) for more information.

Instructor Information

Ian M McCullough, PhD (he/him)

CMC e-mail: imccullough@coloradomtn.edu

Office Hours: *please make an appointment*

- Virtual: I am available for virtual office hour appointments on Wednesdays from 3-5pm. Please sign up for a slot via Cisco Webex on the Canvas course page. I do not plan simply to sit in the virtual meeting room on any given Wednesday if there are no appointments scheduled. If you want to speak with me but are unavailable during the Wednesday window, please email me with your available times.

- In-person: available by appointment only (Tues/Thurs afternoons only).

Required Course Materials

There is no traditional textbook for this course. Required readings will be a mix of primary literature, web materials and a popular science book *The Sixth Extinction*. This book is a small fraction of the cost of most textbooks, is much more readable and is much less rigid.

[The Sixth Extinction: An Unnatural History by Elizabeth Kolbert \(ISBN: 9780805099799\)](#)

Otherwise, many of the materials presented in this course will be based on the following texts. If you are looking for a classic conservation biology textbook, both are excellent resources. Sher and Primack (2020) is more up-to-date and will review many relevant biology/ecology topics, but is considerably more expensive than Sodhi and Ehrlich (2010) (i.e., most things cost more than \$0).

Sher, A. A. & Primack, R. B. (2020). *Introduction to Conservation Biology*. Sinauer Associates, Incorporated, Publishers. 2nd Edition.

Sodhi, N. S. & Ehrlich, P. R. (Eds.). (2010). *Conservation biology for all*. Oxford University Press.

Available for free online as an e-version: <https://www.mongabay.com/conservation-biology-for-all.html>

II. Course Description

Explores the science and practice of biological conservation with the goal of preserving Earth's biodiversity. Students will examine the causes of reduction in biodiversity from local to global scales and investigate practical approaches to prevent the extinction of species, maintain genetic diversity within species, and protect and restore biological communities and their associated ecosystem functions. Conservation biology is an inter- and transdisciplinary field that applies scientific knowledge to the process of conservation through strategies such as habitat restoration, wildlife conservation, adaptive management, and social/cultural change. This course also addresses diverse cultural approaches to conservation, including community-based natural resource management and non-western and/or indigenous approaches associated with traditional ecological knowledge. Includes laboratory and field experiences.

III. Student Learning Outcomes, Competencies and Skills

1. Demonstrate an in-depth understanding of biodiversity, biogeography and patterns in biodiversity distribution.
2. Evaluate the limits to valuing biodiversity and the challenges of market and non-market valuation.
3. Acquire familiarity with concepts and theories important to ecological economics.
4. Demonstrate an in-depth understanding of species extinction, background vs. mass extinction, extinction debt, and natural vs. Anthropocene defaunation.
5. Demonstrate an in-depth understanding of the types of species protections, protected areas, and the costs vs. benefits of various management plans and approaches.
6. Understand ethics, economics, and efficacy of restoration ecology intervention methods.
7. Demonstrate an in-depth understanding of the trade-offs in biodiversity conservation and human well-being.
8. Acquire familiarity with concepts and theories important to the ecological-economic optimization of biodiversity conservation under climate change uncertainty.

IV. Evaluation Methods

The table below describes the graded course components and their contributions to the overall course grade. Although you will be asked to work collaboratively on some occasions, assignments will generally be submitted and graded individually (with some exceptions for completion grade assignments).

Component	Percent of grade	Comment
Homework	15%	Graded based on completion. Don't mess these up! (1 drop per semester)
Participation and engagement	10%	Graded based on completion. Don't mess these up! (1 drop per semester)
Conservation Solutions Project	35%	Outline = 10% Final paper = 20% Oral presentation = 5%
Midterm exam	20%	Online on Canvas
Final exam	20%	Online on Canvas

Grading Scale

<u>Grade Points</u>	<u>%</u>	<u>Quality</u>
A	93.5%-100%	4.0
A-	89.5%-93.4%	3.7
B+	86.5%-89.4%	3.3
B	82.5%-86.4%	3.0
B-	79.5%-82.4%	2.7
C+	76.5%-79.4%	2.3
C	72.5%-76.4%	2.0
C-	69.5%-72.4%	1.7
D+	66.5%-69.4%	1.3
D	62.5%-66.4%	1.0
D-	59.5%-62.4%	0.7
F	below 59.5%	0.0

Homework (15%): Most weeks there will be a short homework assignment associated with that week's lecture and/or readings. These will generally entail written responses of a paragraph or a few sentences. Homework will be "graded based on completion", with completion defined as a thoughtful, on-time submission that shows reasonable effort, adequately addresses the prompt and follows basic directions. Essentially, these are pass/fail. The lowest graded assignment will be dropped. I reserve the right to change these grading policies if it becomes clear that people are missing the mark.

Participation and engagement (10%): Your success in both this class and in "real-world" conservation depends on your presence, preparedness and motivation to engage in and elevate the SUS-/ESS-4100 learning experience. You do not earn points simply by showing up per se, but you

will earn points for participating in classroom discussions and associated activities. Therefore, if you are absent, you should contact me to make alternative arrangements. Similar to homework, these activities will be “graded based on completion”, with completion defined as a thoughtful, on-time submission that shows reasonable effort, adequately addresses the prompt and follows basic directions. Essentially, these are pass/fail. The lowest graded assignment will be dropped. As with homework, I also reserve the right to change these grading policies if necessary.

Exams (40%): Two online/take home exams (midterm and final each are worth 20% of your grade) will be administered during the semester. You must complete exams within a designated time window. Exams may consist of a variety of question formats, but you can expect primarily written response questions. Exams are effectively open book due to the online format, but are not designed to provide time for you to relearn topics. You are expected to work alone during exams. The final exam will focus on materials covered after the midterm. Details on exam content and strategies for success (e.g., study guides and review sessions) will be provided in class and posted on Canvas.

Conservation Solutions Project: (35%): This class culminates in study of a contemporary conservation problem and the proposal of a novel solution. This project consists of several incremental steps that will occur throughout the semester. Some of these steps will be participation or homework grades, **but the 35% for this project as a whole consists of 10% for your outline, 20% for your final report and 5% for a brief in-class presentation.** Instructions for all project components will be announced in class and posted on Canvas.

NOTICE: A student judged to have engaged in academic misconduct as defined in the “Academic Policies and Requirements” section of the *Colorado Mountain College Student Handbook* will, at a minimum, receive a “zero” for the work in question. The student may also be removed from the class, resulting in a failing grade. All student course material may be submitted to turnitin.com (or another anti-plagiarism program) at the instructor’s discretion. “Academic Expectations”, the “Student Code of Conduct and Judicial Process” and more information about academic misconduct can be found in the *Student Handbook*.

V. Class Management

This course will be delivered [in person](#) but will require you to access materials online through Canvas. You are expected to visit the course Canvas page regularly to access materials and periodic announcements.

Despite what the course catalog implies, this class will not follow a strict Tuesday lecture/Thursday laboratory format. With a few exceptions, we will typically cover one major topic per week (e.g., climate change) via the following format:

Tuesdays (3:30-5:00pm): You can expect a lecture, but with considerable interactive content. Lecture lengths will vary, but will often be shorter than a “normal” course lecture. In other words, lectures will be broken up with interactive content or short activities designed to help you digest and better understand what we cover in class (or as faculty say “engage with course content”). Examples may include individual or small-group thought exercises or longer break-out sessions. You are encouraged to ask questions during lectures, particularly given the relatively small class size. Although PDFs of lecture slides will be posted after class, these will obviously be missing the classroom interactive components. Therefore, posted PDFs of slides should be used to help you study and recall classroom content rather than as a substitute for being in class.

Thursdays (3:30-5:50pm): Loosely termed “Discussion”, Thursdays will consist of a mix of full-class and small-group discussions and activities, as well as the occasional short lecture. Thursday activities will draw from weekly lectures, readings and homework that you are expected to have completed prior to the start of class on Thursdays. Due to the highly collaborative, applied nature of conservation biology, this portion of the course will emphasize work in small groups (and/or the whole class depending on the number of students). Participation and engagement in Thursday discussions are not only part of your grade (i.e., there will often be short, graded assignments), but are important both for your success in mastering course material and developing your ability to work toward creative, collaborative conservation solutions.

Attendance: In short, attendance per se is not graded. However, your grade will likely suffer if you do not regularly attend class largely because 1) you will miss the vital interactive components of the class and 2) you will miss short in-class assignments that are part of your overall participation/engagement grade. See below for policies on graded assignments and late work submission.

Homework: In general, you can expect one homework assignment per week associated with a given week’s major topic. These are graded based on completion and are due by the start of class on Thursdays, unless otherwise specified. Homework will be announced no later than the previous Friday and will often go hand-in-hand with weekly readings. See Course Grades section below for further details.

Readings: There will be weekly reading assignments from a combination of primary literature, *The Sixth Extinction* or various web resources. You are expected to have completed readings prior to the start of class on Thursdays, unless otherwise specified. Readings will be announced no later than the previous Friday and often go hand-in-hand with homework. Often, it makes sense to have homework assignments open while reading.

Late work policies

Most assignments in this course are assigned several days or weeks before the due date to give you the flexibility to arrange your schedule as needed and submit work on time. Late work policies vary by assignment type. If you are ever dealing with an emergency that affects your ability to turn in assignments on time, please contact me when it is safe to do so.

Homework: Homework is due by the start of class on Thursdays because homework is designed to help you prepare for that day’s class. Because these are graded based on completion (i.e., effectively pass/fail), there is no partial credit for homework (late or on-time). I drop one homework assignment per semester to help alleviate effects of any unforeseen events. Late homework assignments will not be accepted, except in the case of emergencies or overly extenuating circumstances, at my discretion.

In-class assignments (i.e., participation/engagement grades): In general, these are designed to be completed in class and I do not accept submissions from students who were not present for the class associated with a particular assignment. This is because students do not get the same learning experience with an assignment if they are not present for the associated discussions and interactions with me and other students. As with homework, I drop one in-class assignment per semester to give students who have to miss a class for whatever reason a break. If you have to miss an assignment due to emergencies, pre-arranged absences or other overly extenuating circumstances, please contact me so that we can discuss possible alternative assignments.

Conservation solutions project: Unless prior arrangements are made or in case of emergencies, grades on late assignments (outline and final report) will be automatically reduced by 10% per each calendar day late. For example, if an assignment is worth 20 points and you submit one day late, the highest grade you can earn is 18/20 (90%). If you have to miss the class day devoted to oral project presentations, we will arrange for you to present on a different day (likely earlier).

Exams: Exams are online/take home and are offered over a window of many days. You may take an exam earlier if prior arrangements are made. Makeup exams will only be allowed due to medical issues or emergencies. In the case of other extenuating circumstances, makeup exams will only be allowed at the instructor's discretion.

Bottom line: Conservation Biology is not your typical field and therefore is not your typical class. Unlike other classes you may have taken in the past, you will not be asked to memorize or recite terms or equations (in today's age, anyone can look stuff up online at any time and I assume you know how to Google things). Although we will often draw from concepts from your past biology and ecology classes, this class is not simply a review of these topics. Instead, because conservation biology is a highly applied field, we will focus on the significance of these topics to conservation and how we apply them to conservation problems. In other words, you should think of this class as a training ground for a career in biodiversity conservation – we will practice critical thinking, problem solving and applying scientific principles and data to conservation problems. You will be frequently placed in situations designed to mimic contemporary conservation problems and then asked to develop creative solutions collaboratively with your classmates. As such, I encourage you to approach every class with an open mind and recognize that we need everyone's collective knowledge, ideas and perspectives to identify novel, successful conservation solutions. We are truly in an "all hands on deck" situation and now is the time to think outside the box. Unlike your experiences in other classes, there often is no single "right answer" to conservation problems. If there were, we probably would have solved them already.

VI. CMC Libraries & Learning Commons

The CMC Libraries Team is here to help you! As a CMC student, you have access to the CMC Libraries both in-person and virtually. You have 24/7 access to thousands of online journals, magazines, newspapers, e-books, audiobooks, videos, images, career resources and practice tests from the [CMC Libraries website](#) or from the Libraries link in Basecamp and Canvas. Whether or not you live near a campus with a physical library, all CMC students can check out any of the many thousands of print books using Interlibrary Loan (ILL) and the CMC Libraries team will get that item delivered to any CMC campus.

You can use any or all of these ways to connect with your helpful, professional library staff to get you what you need:

- In-person at the Dillon, Edwards, Leadville, Spring Valley, and Steamboat Springs campuses.
- [Online](#) via email, 24/7 chat, telephone, or video conferencing
- [Online resources](#) such as video tutorials

VII. Student Information and Support Services

- A. **Right to Know**: The College is required by law to share certain types of information with students. The [Right to Know webpage](#) includes information including disability services, complaint processes, policies and procedures, textbook information, registration, attendance

and grading, graduation rates, and more. In addition, [Student Services](#) offers resources to promote your well-being and success. Take advantage of these programs and services, which include academic support and advising, access and disability services, career services, veterans' benefits, housing, orientations, food and nutrition support, and financial aid. Reach out and find support at [CMC Counseling Services](#), [You@CMC](#), and [Colorado Crisis Services](#).

- B. **Students Rights and Responsibilities:** The [CMC Student Handbook](#) outlines the expectations for student conduct as well as the college's academic policies and expectations. This includes expectations for appropriate use of technology, students' rights and responsibilities within and outside of the classroom, and academic policies and requirements. Classroom behavior that disrupts the teaching and learning environment is unacceptable.
- C. **Notice of Nondiscrimination:** Colorado Mountain College does not discriminate on the basis of age, color, disability, gender identity, marital status, national or ethnic origin, political affiliation, race, religion, sex (including pregnancy), sexual orientation, veteran status, and family and genetic information, or in its programs and activities, as required by Harassment and Discrimination Prevention (Title IX) of the Education Amendments of 1972, Title II of the Americans with Disabilities Act of 1990, as amended, Section 504 of the Rehabilitation Act of 1973, Titles VI and VII of the Civil Rights Act of 1964, the Age Discrimination Act of 1975, and as provided in other applicable statutes and College policies. The College prohibits sexual and gender-based harassment, including sexual assault, and other forms of interpersonal violence. To obtain more information regarding non-discrimination policies, visit the [Notice of Nondiscrimination webpage](#) or contact Lisa Doak, Harassment and Discrimination Prevention (Title IX) Coordinator, ldoak@coloradomtn.edu, 970-947-8351, or Angela Wurtsmith, Director of Human Resources, awurtsmith@coloradomtn.edu, 970-947-8311.
- D. **Right to Privacy:** Colorado Mountain College continues to encourage and foster a vibrant academic community, whether remote or in person. We are committed to respecting the privacy rights of all participants in the classroom environment and promoting the highest standards of academic integrity. Sharing course content outside of the course may have a chilling effect on classroom discussion and interfere with the educational process. Students may not record, photograph, screenshot, share, reproduce or re-distribute any class activity without written permission from the instructor, except as necessary as part of approved accommodation discussed below. Additionally, CMC discourages non-students from listening to courses in the event student personal identifying information is revealed during the course. Students in all modalities are equally held to the academic standards set forth in the Colorado Mountain College Student Handbook. Some students may require a reasonable accommodation under the Americans With Disabilities Act and Amendments Act that would allow them to record, photograph, screenshot or reproduce some course content, including video, audio, or other content. Students with disabilities should contact CMC's Access, Inclusion & Disability Coordinator about receiving these reasonable accommodations. More information can be found at [Access, Inclusion & Disability Services](#).

VIII. Tentative Course Schedule

This schedule is subject to change at any time, depending on instructor evaluation of student skills/understanding/knowledge. The instructor will communicate changes to the schedule as needed. Please note that the official, more detailed and complete course schedule is posted and regularly updated on Canvas under "General Materials". Only major due dates (tentative) are listed below.

Week	Topic	Note
	Course introduction and overview	
1 (Jan 16)	What kind of bear is best?/Conservation what?	
	Biodiversity drivers and threats	
2 (Jan 23)	Biodiversity through space and time	
3 (Jan 30)	Extinctions: Season 6	
4 (Feb 6)	Climate change	
5 (Feb 13)	Habitat loss, degradation and fragmentation	
6 (Feb 20)	Space invaders	Project proposal due 2/24
7 (Feb 27)	Conservation of populations, overexploitation	
8 (Mar 6)	Poaching	Take home midterm released
9 (Mar 13)	Spring break	
	Conservation and restoration approaches	
10 (Mar 20)	Pyrodiversity and biodiversity	Take home midterm exam due 3/24
11 (Mar 27)	Conservation approaches part 1: protected areas	
12 (Apr 3)	Conservation approaches part 2: coarse- and fine-filter conservation	Optional annotated bibliography due 4/7
13 (Apr 10)	Conservation approaches part 3: legislative and economic approaches	Project outline due 4/14
14 (Apr 17)	Restoring lost species and ecosystems part 1: ex situ conservation and reintroductions	
15 (Apr 24)	Restoring lost species and ecosystems part 2: the pursuit of wildness	Class presentations 4/27 Final paper due 5/2 Take home final exam released
16 (May 1)	Finals week (no class)	Take home final due 5/5