# BIOL-117: CONSERVATION BIOLOGY

**Effective Term**
Fall 2025

**BOT Approval Date**
12/14/2023

**Discipline**
BIOL - Biology
**Course Number**
117

**Course Title**
Conservation Biology

**Short Title**
Conservation Biology

**Credit Status (CB 04)**
D - Credit - Degree applicable

## Units

**Lecture Units**
3.00

**Total Units**
3.00

## Hours

**Lecture Contact Hours**
48-54
**Out of Class Hours Lecture**
96-108

**Total Contact Hours**
48 - 54

**Total Out of Class Hours**
96 - 108

**Total Student Learning Hours**
144 - 162

**Distance Education**
Yes

## Distance Education

**Distance Education Type**
Both Fully Online and Hybrid Online

**Fully Online Delivery Requirements:**
**a. Students must be notified via the college schedule of classes and the syllabus for the class if proctored tests are required for this course**
**b. Any planned face-to-face meetings, such as an orientation or study session, must be optional**

**c. The MSJC curriculum committee requires the use of accessible, asynchronous discussion as a component of every fully online course**

**Are you using publisher content?**

No

**Regular Substantive Interaction**

Instructor-to-student, student-to-student, and student-to-content contact shall be distributed in a manner that will ensure regular substantive interaction (RSI) is maintained not only weekly but also for the duration of the course. Instructor interactions should be equivalent in time, quality and consistency to the engagement students would receive in a face-to-face course—for example, through announcements, discussion participation, personalized feedback, video messages, or other instructional communications. Instructors are expected to be responsive to student inquiries within a 24-72 hour time frame excluding holidays. RSI will be maintained through a variety of methods: • Orientation - Students must be oriented to the online and face-to-face portions at the start of the course. • Announcements - Announcements using the course management system must be posted at least weekly to keep students current on course events, due dates, materials, etc. • Discussion Forums - Content-related discussion forums within the designated CMS will include appropriate instructor participation and will be initiated and maintained, with timely feedback provided. Instructors are required to monitor the discussions and related activities to provide guidance and direction. Open-ended discussion boards may be used to further learning and interaction. • MSJC Communication – Instructor will use MSJC-administered communication tools (such as email or the designated CMS communication tools) to regularly communicate with and provide ease of access to students. • Timely Feedback - Timely feedback on student work will be provided by the instructor, which may include comments and/or rubrics, within the Grades area of the designated CMS. • Scheduled Meetings – Hybrid and synchronous courses will meet at regularly scheduled times. ADA Compliance - All course interactions and content must be designed with accessibility in mind and meet ADA requirements.

**Catalog Description**

This course investigates the science of preserving biodiversity and sustaining the earth. This is an interdisciplinary, introductory course that examines the human impact on biodiversity and the earth. The course synthesizes the fields of ecology, evolution, genetics, philosophy, economics, sociology, and political science with emphasis on the development of strategies for preserving populations, species, biological communities, and ecosystems. This course is not intended for biology majors.

## Codes

**TOP Code (CB 03)**

0301.00 - Environmental Science

**CIP Code**

26.0101 - Biology/Biological Sciences, General.

**Repeatability Code**

No

**Grading Option**

Letter grade OR P/NP

## GE Information

**Check GE Types Requested**

AA/AS A - Natural and Physical Sciences

## Cal-GETC Areas

**Approved Cal-GETC Area**

AREA-5B

## Learning Objectives

**Learning Objectives**

| Learning Objective |
| --- |
| 1. Relate the scientific method to the study of conservation biology. |
| 2. Contrast species diversity in various biomes. |

| |
|---|
| 3. Evaluate the effects of human activities on habitats and their inhabitants and demonstrate how to assess the environmental impacts of these activities. |
| 4. Combine the fundamental concepts of chemistry, biology, ecology, evolution, animal behavior, law, and politics. |
| 5. Propose how chemistry, biology, ecology, evolution, animal behavior, law, and politics pertain to conservation biology. |
| 6. Assess the value of biodiversity and how it relates to environmental ethics and environmental economics. |
| 7. Document the major achievements of environmental legislation as they relate to conservation of threatened and endangered species and habitats. |
| 8. List and describe the major species of plants and animals protected under the Endangered Species Act. |
| 9. Propose how sustainable development and environmental policy can balance human needs with species and habitat conservation. |
| 10. Evaluate current applications of technology to the field of conservation biology. |
| 11. Compare approaches to environmental ethics such as Leopold's land ethic that call for all people and the land to be treated with respect for the mutual benefit of all. |

## Learning Outcome Information

**Course Learning Outcomes**

| Learning Outcome |
|---|
| 1. The student will demonstrate the ability to use the scientific method and to evaluate data with regards to conservation biology. |
| 2. The student will organize their time and exhibit persistence in completing course work. |
| 3. The student will critically examine the diversity of scientists and career pathways in conservation biology, fostering an inclusive mindset towards various identities and experiences within the scientific community. |

**Program Learning Outcomes**

| Learning Outcome |
|---|
| 1. Students through persistence will develop problem solving skills in science thinking both critically and abstractly about issues using science as the foundation for understanding. |
| 2. Students will gain scientific awareness with a flexible approach including a willingness to change perspectives and an ability to weigh alternative options while staying rooted in the understanding of their impact as local, national, and global citizens. |
| 3. Students will apply past knowledge to new scientific situations, being able to think abstractly regarding science and communicate this newfound knowledge in the language of science and the scientific method. |
| 4. Students will achieve literacy in the language of science and the scientific method, demonstrating a willingness to respond with wonderment and awe with regards to the physical and biological principles of science, and gather data through all senses. |
| 5. Students will learn hands-on skills in the laboratory, demonstrate how to measure and collect data from experiments with accuracy and precision, and think critically about the results. |

**Institutional Learning Outcomes**

Communication: The student will effectively express and exchange ideas through listening, speaking, reading, writing, visual works, and other modes of interpersonal expression.
Critical Thinking: The student will analyze problems, gather and synthesize relevant information, evaluate ideas, information, and evaluate alternative points of view to create, innovate and implement effective solutions.
Cultural Awareness and Humility: The student will demonstrate knowledge of and sensitivity toward individuals of diverse ethnicity, age, gender, sexual orientation, and religious affiliations, as well as toward those individuals with diverse abilities and socio-economic classes to respectfully interact with individuals of diverse perspectives, beliefs and values while being mindful of the limitation of their own cultural frameworks.
Information and Technology Literacy: The student will access, interpret, evaluate, and apply relevant information sources and digital media effectively, and in an ethical and legal manner.
Scientific Awareness: The student will apply the scientific method of inquiry to assess potential solutions for real-life challenges by employing science-based knowledge and methodologies in daily life.
Social Awareness: The student will recognize and analyze the interconnectedness of global, national, and local concerns, analyzing cultural, political, social, and environmental issues from multiple perspectives and appreciate similarities and differences among cultures.
Civic
Personal
and Professional Responsibility

## Content

**Course Lecture Content**

I. Introduction to Conservation Biology
- A. What conservation biology is
  - 1. an interdisciplinary "crisis discipline"
  - 2. an active application of basic science
- B. history of conservation biology
- C. human population growth

II. Science Basics
- A. scientific methods
- B. basic chemistry
- C. basics of biogeochemical cycles
- D. basic genetics
  - 1. DNA
  - 2. inheritance
- E. Evolution and adaptation
  - 1. microevolution leading to adaptation

a. artificial selection
b. natural selection
c. mutation
d. gene flow
e. genetic drift
f. assortative mating

  - 2. macroevolution and mechanisms of speciation

a. allopatric speciation
b. parapatric speciation
c. evidence for macroevolution

- F. extinctions
  - 1. background extinctions
  - 2. mass extinctions
    - a. natural
    - b. anthropogenic

III. Conservation Values
- A. Aldo Leopold's Land Ethic
- B. environmental ethics
- C. environmental economics

IV. Global Biodiversity
- A. the Biological Species Concept (BSC)
- B. the Phylogenetic Species Concept (PSC)
- C. Threatened and Endangered Species
- D. the Endangered Species Act
- E. habitat destruction
  - 1. rainforests
  - 2. temperate zones
  - 3. deserts
  - 4. chaparral
  - 5. mountain
  - 6. marine
- F. introduction of exotic species

G. poaching and illegal pet trade

V. Conservation Ecology
- A. conservation genetics
- B. demographic processes
- C. community-level conservation

VI. Design and Management of Nature Preserves
- A. conservation goals
- B. Theory of Island Biogeography
  1. habitat fragmentation
  2. edge effects
  3. inbreeding depression
- C. case studies of conservation management

VII. Restoration Ecology

VIII. Environmental Impact Assessment

IX. Sustainable Development

X. Policy Making

XI. Current Trends in Conservation Biology
- A. captive breeding programs
- B. biotechnology and conservation
- C. use of GIS

## Methods of Instruction

**Method**

Activity

**Integration**

Hands-on activities, field trips, and demonstrations of scientific principles and processes. For example, students may be asked to conduct research over the issue of the endangered Kangaroo Rat in Riverside County. The class then conducts a mock trial in which half the class represent the U.S. Fish and Wildlife Service and the other half of the class represents the development company. The two sides hold a trial over potential violation of the Endangered Species Act by the developers due to the finding of droppings of the endangered Kangaroo Rat on the proposed development site. This activity enables students to think from both sides of an argument and to appreciate the difficulty conservation biologists face in enforcing environmental legislation.

**DE Adaptations for MOI**

Students can be placed into groups in the CMS. Each group will be assigned one side of an issue to defend. Students can then carry out a mock trial or debate during a synchronous class meeting by creating accessible captioned videos and/or participating live via accessible video conferencing tools within the CMS. This activity can also be delivered asynchronously using the accessible discussion board function that can be read by a screen reader. within the CMS.

---

**Method**

Discussion

**Integration**

Class discussions on a variety of issues as they relate to the study of conservation biology. For example, students may read an article on poaching in the rainforest and then be asked to discuss how sustainable development can be used as alternative methods of income for poverty-stricken poachers. Another topic may involve discussion of historical practices in conservation biology and the lack of/violation of ethical considerations in many such practices, with a focus on how such practices impacted marginalized populations.

**DE Adaptations for MOI**

Discussion can take place asynchronously through the accessible CMS discussion board or synchronously using the accessible video conferencing tools within the CMS.

**Method**

Lecture

**Integration**

Lecture, audio-visual presentations, and demonstrations of current concepts in conservation biology. For example, lectures may be presented using PowerPoint to provide photographs and video clips to demonstrate appearances of extinct organisms.

**DE Adaptations for MOI**

Lecture content may be provided in the CMS, asynchronously using tools such as course pages or creating accessible captioned videos. Lecture can also be provided synchronously via accessible video conferencing tools within the CMS.

---

**Method**

Papers and Reports

**Integration**

Students will be given a choice of topics to read about and perform further research on. A detailed report guideline and grading rubric will be provided. Topics may include: habitat destruction, climate change, introduction of exotic species, poaching and illegal pet trade, captive breeding programs, sustainable development, and Aldo Leopold's land ethic, among many others.

**DE Adaptations for MOI**

Papers and Reports are assigned within the CMS. Detailed guidelines and grading rubrics will be provided within the CMS so that they are accessible and can be read by screen readers. Students will submit papers and reports via assignment submission links within the CMS.

---

## Methods of Evaluation

**Method**

Papers

**Integration**

Students will apply science concepts presented in the course in order to predict outcomes and treatments appropriate for a real life scenario. For example, students are shown a video from a famous industrial company purporting to conduct sustainable logging in the rainforest. The students are then asked to write an essay examining the validity of the company's claim, using their knowledge of conservation principles learned in class. Detailed instructions and a rubric will be provided. Papers will be evaluated by the instructor within 2 weeks and will be graded for content accuracy and quality using the provided rubric.

**DE Adaptations for MOE**

Accessible videos will be available through the CMS. Essay papers will be turned in as an assignment in the CMS. Detailed instructions and a rubric will be provided in the CMS. Papers will be evaluated by the instructor within 2 weeks and will be graded for content accuracy and quality using the provided rubric.

---

**Method**

Class Participation

**Integration**

In-Class Participation to promote student interaction. Participation points may be assessed in a number of different ways including: short written assignments, answering instructor questions, giving oral presentations, discussing out-of-class readings, iclicker© or other classroom response system, etc. All evaluation materials are college level with a variety of formats such as multiple choice, fill-in the blank or short answers and essay. Evaluation will be based on participation/completion rather than correctness of answers and grading will be completed within 2 weeks of the activity.

**DE Adaptations for MOE**

Participation may be assessed in a number of different ways in the online environment including: short written assignments using text submission assignment tool in the CMS, answering instructor questions using text submission assignment tool in the CMS, giving oral presentations using video creating tools such as Youtube or those provided in the CMS, such as Studio, and discussing

out-of-class readings using the discussion board feature in the CMS, google docs, or break out rooms using a video conferencing tool. Student will receive feedback from the instructor, within 2 weeks of submission, through the CMS gradebook. Evaluation will be based on participation/completion rather than correctness of answers.

**Method**

Exams/Tests

**Integration**

Examinations to determine the students' understanding and grasp of the course content. Examinations may be multiple-choice, multiple answer, matching, labeling, true/false, short answer, long essay questions, or oral. An example question may be the following: "Evaluate the effects of habitat fragmentation on biodiversity." Multiple choice, true/false, etc. style questions would be automatically graded for correctness within the CMS. Short/long essay answers or oral based exam questions would be graded by the instructor within 2 weeks and evaluation would be based on thoroughness and correctness of answers.

**DE Adaptations for MOE**

Examinations are presented online in the CMS and may include multiple choice, multiple answer, matching, labeling, true/false, short answer, long essay questions, or oral based questions. Oral exam answers would be submitted via studio video in the CMS or synchronously using a video conferencing platform. Multiple choice, true/false, etc. style questions would be automatically graded for correctness within the CMS. Short/long essay answers or oral based exam questions would be graded by the instructor within 2 weeks and evaluation would be based on thoroughness and correctness of answers. There is no requirement for proctored, on campus attendance for examinations.

**Method**

Final Performance

**Integration**

To determine students' synthesis of materials assigned and discussed in lecture and individual study a final cumulative assessment will be given. An example final exam essay question might be: "Analyze the benefits and drawbacks of applying the Biological Species Concept versus the Phylogenetic Species Concept in terms of application of the Endangered Species Act and how this relates to Leopold's concept of a land ethic." A detailed rubric would be provided and answers will be evaluated based on thoroughness and correctness within 2 weeks of submission.

**DE Adaptations for MOE**

The essay question(s) would be provided to students through the quiz feature of the CMS. A detailed rubric would be provided and answers will be evaluated based on thoroughness and correctness within 2 weeks of submission.

**Method**

Group Projects

**Integration**

Group/Paired Discussion to involve students in critical thinking interactions and activities concerning current issues and topics in conservation science. For example, students might be asked to read an article about the use of cloning to bring back an endangered species. Students then debate the ethics and science of this subject in a class discussion format. Evaluation of group projects is done with use of a rubric that will be based on accuracy, thoroughness, creativity, and involvement/participation of each group member on a certain portion of the project. Written feedback will be provided to the student/group within 2 weeks.

**DE Adaptations for MOE**

Group discussion can either take place asynchronously via the discussion board in the CMS or synchronously using a video conferencing program. Evaluation of group projects is done with use of a rubric that will be based on accuracy, thoroughness, creativity, and involvement/participation of each group member on a certain portion of the project. Written feedback will be provided to the student/group through the gradebook in the CMS within 2 weeks.

**Method**

Research Projects

**Integration**

Independent review and analysis of scientific research. For example, students may be asked to read and contrast two published scientific/legal journals in the field of conservation that yield conflicting results or conflicting ethical considerations. Students would then be asked to write a critique of the articles, citing biases in the methodologies used and in the authors' interpretations of the results, as well as the ethical considerations or lack thereof addressed in the article. A few examples could include studies on the effects of rainforest destruction, global climate change, food injustices within U.S History, public lands and the historical ethical violations that occurred in the acquisition of many such public lands, the endangered species act, animal poaching, habitat destruction, political activism and more.
The research project will be assessed with use of the provided rubric, according to the appropriateness of the literature used to write the research paper, the accuracy of results, the correct formatting of the paper, the quality of organization and presentation of results in tables, graphs, and narrative form, and the coherence and correspondence of conclusions based on the research. Students will receive feedback within 2 weeks.

**DE Adaptations for MOE**

Detailed instructions and a rubric will be provided through the CMS. The written report will be submitted as an assignment through the CMS. The research project will be assessed with use of the provided rubric, according to the appropriateness of the literature used to write the research paper, the accuracy of results, the correct formatting of the paper, the quality of organization and presentation of results in tables, graphs, and narrative form, and the coherence and correspondence of conclusions based on the research. Students will receive feedback via the CMS gradebook within 2 weeks.

---

**Method**

Oral Presentation

**Integration**

Oral Presentations of science research information. For example, students may be asked to research (using published scientific journals) one topic of their choice in the study of conservation biology. Another oral presentation assignment may have students research one contributing scientist in the field, who is from a traditionally marginalized group and highlight their accomplishments. Evaluation of the oral presentation will be performed based on a provided rubric and will include criteria such as accuracy and throughness of content, use of appropriate resources, and appearance of presentation through the use of images, figures, charts etc. Feedback will be provided within 2 weeks of submission.

**DE Adaptations for MOE**

Oral presentations are delivered synchronously using a video conferencing program or asynchronously by posting a video as an assignment submission or discussion board post within the CMS. Evaluation of the oral presentation will be performed based on a provided rubric and will include criteria such as accuracy and throughness of content, use of appropriate resources, and appearance of presentation through the use of images, figures, charts etc. Feedback will be provided via the gradebook within 2 weeks of submission.

---

## Assignments

**Assignment Type**

Other

**In-class and/or outside of class**

Outside of class

**Formative or Summative**

Summative

**Assignment**

Critique and apply college level texts and research material to problems in conservation biology, and demonstrate critical thinking in relationship to materials presented in class and/or derived from out of class sources. Describe, compare and contrast, evaluate, and synthesize major course topics in your own words and formulate working definitions of concepts and vocabulary introduced in the course. Demonstration of these skills will be assessed in the form of a project. Example projects include:
1. Prepare an environmental impact assessment report for a fictional plot of mitigated land in Southern California.

2. Evaluate a set of geographical and ecological parameters, and then design a nature preserve on paper using your knowledge of the Theory of Island Biogeography and conservation goals.
3. Write letters (minimum of 3) to a politician(s), involved organizations, and the public (the letter must be different to each group with the particular language and focus of the letter geared at the specific group) regarding a current conservation issue in Southern California.
4. Go on a field trip to the San Diego Wild Animal Park, research three species that are part of captive breeding programs at the park. Then research the success of these programs including legal and political setbacks to the programs' success.
5. Assess, in an essay, how habitat fragmentation can drive evolution via genetic bottlenecks, such as happened in cheetahs. Address why such genetic bottlenecks can be detrimental to a species. Detailed guidelines and rubrics will be provided for each different type of project. Projects will be graded according to the provided rubric and will include assessment of the thoroughness, accuracy of content, use of resources, demonstration of critical thinking skills, and presentation of the research/information in an organized, detailed, and well written report. Projects will be graded within 2 weeks of submission and grades will be posted in the CMS.

**How assignment will be adapted in online format**

Instructions, guidelines, and rubrics for the project will be provided in the CMS and the project will be submitted within the CMS. Projects will be graded according to the provided rubric and will include assessment of the thoroughness, accuracy of content, use of resources, demonstration of critical thinking skills, and presentation of the research/information in an organized, detailed, and well written report. Projects will be graded within 2 weeks of submission and grades will be posted in the CMS.

---

**Assignment Type**

Other

**In-class and/or outside of class**

In-class

**Formative or Summative**

Summative

**Assignment**

You will be given at least two lecture examinations over the course of the semester in order to accurately assess your reading, writing, and speaking comprehension of various topics in conservation biology presented in lecture. A mid-term and a final exam are to be employed at a minimum for this course. Exams shall be a mixture of many question types including, but not limited to: Multiple Choice, Multiple Answer, Matching, Labeling, Short Answer, Long Answer Essay, and True/False. Exams will be auto-graded, with the exception of short answer or long answer essay questions, which require manual grading. All grading will be based on correctness of answers and scores will be posted in the CMS within 2 weeks of the exam date.

**How assignment will be adapted in online format**

Exams are administered in the CMS. There is no requirement for proctored, on-campus attendance for examinations. Exams will be auto-graded, with the exception of short answer or long answer essay questions, which require manual grading. All grading will be based on correctness of answers and scores will be posted in the CMS within 2 weeks of submission.

---

**Assignment Type**

Writing

**In-class and/or outside of class**

Outside of class

**Formative or Summative**

Summative

**Assignment**

Choose from one of the provided toolkit articles to read, perform further research on, and write a research report about following the guideline provided by your instructor.
Examples of toolkit articles to choose from include: "Modern-Day Imperialism in the Global Waste Trade", "Indigenous Environmentalism: The Rights of Manoomin", "Reimagining Food Justice and Food Sovereignty", "I am not Your Savior- Dismantling the Black Woman Savior Trope", or "Public Lands Curriculum- Examining the Past to Build a More Equitable Future". The research report must include a literature review, discussion of the major ethical concerns, what current actions are being taken, and what future

actions you think should be taken. Reports will be graded according to a provided rubric and will be assessed according to the quality and thoroughness of the literature review, the quality of organization and presentation of information in tables, diagrams, or charts, the discussion of the major ethical considerations, and inclusion of current and possible future actions. Grades will be posted in the CMS within 2 weeks of submission of the report.

**How assignment will be adapted in online format**

The toolkit articles will be provided in the CMS and reports will submitted within the CMS. Reports will be graded according to a provided rubric and will be assessed according to the quality and thoroughness of the literature review, the quality of organization and presentation of information in tables, diagrams, or charts, the discussion of the major ethical considerations, and inclusion of current and possible future actions. Grades will be posted in the CMS within 2 weeks of submission of the report.

---

**Assignment Type**

Reading

**In-class and/or outside of class**

In-class

**Formative or Summative**

Formative

**Assignment**

Find a scientist from a traditionally marginalized community that has made contributions in the field of conservation biology, or more broadly in environmental science. Highlight the contributions of this scientist and why you chose them specifically, in a brief oral presentation to the class. This assignment will be evaluated mainly on participation. Scores will be posted in the CMS within 2 weeks of the presentation.

**How assignment will be adapted in online format**

The oral presentation can recorded in studio, youtube, or other video recording programs and posted to the discussion board in the CMS or can be presented synchronously to the class using a video conferencing platform. This assignment will be evaluated mainly on participation. Scores will be posted in the CMS within 2 weeks of the presentation.

---

## Course Materials

**Textbooks**

1. Anna Sher (2022). An Introduction to Conservation Biology 3rd Edition. Oxford University Press. ISBN- 0197564372
2.Malcolm L. Hunter Jr., James P. Gibbs, Viorel D. Popescu (2021). Fundamentals of Conservation Biology, 4th Edition . Wiley-Blackwell publisher. ISBN: 978-1-119-14416-8

**Open Educational Resources**

1. Navjot S. Sodhi and Paul R. Ehrlich. Conservation Biology for All Illustrated Edition. Oxford University Press ISBN: 0199554242 . Free online text book: https://www.mongabay.com/conservation-biology-for-all.html

## Class Size Information

**Class Size**

40

**Class Size Category**

A - Lecture/discussion 40

## Diversity and Inclusion

**Explain how diversity and inclusion(e.g., gender, culture/race, sexuality, etc.) is infused into the course.**

The earth and its ecosystems thrive on diversity. Yet, racial, ethnic, and gender inequities remain ubiquitous in science, technology, engineering and mathematics (STEM) and particularly in the fields of ecology and conservation biology. In order to try to bring about change and improvements in this area, several assignments that focus on diversity, inclusion, and social justice are included in this course. While grossly underrepresented in the field; women, BIPOC, LGBTQ+, and disabled scientists have made contributions in

conservation biology and environmental science, these scientists and their accomplishments will be highlighted within the lecture content and as the focus of an assignment. Several lecture topics and assignments in this course will bring to light many historical practices in conservation biology which disproportionally, negatively impacted marginalized communities. Acknowledgment of the unethical and racist practices from the past will be made, and discussion of the ethical considerations of past and current conservation issues will be addressed within the lecture content and assignments.

**Describe how assignments, instruction, evaluation, course content, and interactions are contextualized for diverse learners promoting an equitable course.**

To support diverse learners, more emphasis has been placed on the process of learning and establishing a growth mindset, as well as the role of individual differences in the learning process. This will encourage students to have an increased self-awareness, awareness of others and to engage as individuals and value students as whole people in the learning process. Assignments show a variety of approaches to the course content utilizing a variety of sources, including written texts, popular and scientific articles, accessible videos, and websites while scaffolding approaches to help them understand the critical reading and thinking process. A variety of different types of assignments are used throughout the course and students are given many opportunities to choose the topic of focus for the assignments. The course content, objectives, methods of instruction, methods of evaluation, and assignments, allow students to interact with their instructor, and each other, while learning about real world issues, to build critical thinking skills in community and through personal interaction, in-class and out of class practice to apply skills, and to receive feedback both informally in discussions and other formative types of low stake assignments and formally through summative assessments.

## Interactions

**Explain how the course will incorporate student-to-student interaction.**

Students will engage in a variety of collaborative activities such as break-out rooms, discussion board, or small group assignments so that students will have frequent opportunities to engage in peer-to-peer discussions designed to foster community and encourage students to experience variant interpretations of the content under analysis.

**Explain how the course will incorporate instructor-to-student interaction.**

The instructor will lead lectures in class or online either synchronously or asynchronously. Discussions will be conducted in person during class or through CMS discussion forums, or through breakout rooms in a video-conferencing platform. The instructor will provide feedback to students in the CMS gradebook with regards to responses to formative assignments such as discussions and presentations, as well as provide feedback on summative assignments such as report, projects, and exams. The instructor will communicate with students in class as well as through canvas announcements, email, discussion boards, and in office hours.

**Explain how the course will incorporate student-to-content interaction.**

To learn critical thinking concepts and explore biological processes, the instructor will provide a variety of media for learning. Students will reference accessible and ADA compliant materials such as assigned readings (textbooks, articles, websites), written lecture materials or transcripts of lectures, illustrative images, charts and graphs, video or audio lectures, narrated PowerPoint presentations, embedded or linked multimedia content (such as films, YouTube videos, podcasts, etc.), and student created content, through presentations and discussions.

**Explain how the course will incorporate student-to-self interaction (metacognitive).**

Through discussions, presentations, and assignments, students will pose questions about science as well as how they approach their assignments and analysis. Through readings, lectures, activities, and discussions, students will explore connections between biological content and personal experiences, to demonstrate how science can be a vehicle for analyzing current societal and community concerns. The analytical and critical thinking skills students use in this course while analyzing scientific information have broad applications beyond the classroom. Many assignments in this course allow students to choose their own topic and to reflect on why they chose the topic, how they relate to the topic, and how they may use the newfound information to impact their lives, the lives around them, and the environment.

Key: 462