

**BIOL 450 AND 499: SENIOR CAPSTONE SEMINAR AND SENIOR COMPREHENSIVE EXAM  
COURSE GUIDE AND POLICIES: SPRING 2024**

**DESCRIPTION AND LEARNING OUTCOMES:** The senior capstone seminar focuses on topics that integrate molecular, cellular, organismal, ecological, evolutionary, and population-level processes. We will do this through primary and popular science literature readings organized around a theme of plant-animal interactions. This reading and discussion-based course represents an opportunity to make links between the diversity of topics and concepts encountered throughout your liberal arts experience. Students will lead discussions on primary and “pop sci” literature readings centered on the course theme, and synthesize interpretations of the primary literature in preparation for advancing to biology-related careers and/or graduate studies in the biological sciences. The course culminates with administration of the written comprehensive examination, designed to measure the full range of students' understanding of biology. To pass BIO-499, a student must pass the written exam according to the criteria set by the Biology Department. Students failing to score a passing grade must pass an Oral Comprehensive Exam given by the biology faculty in the following winter or spring term.

**Course Objectives:**

- Evaluate and integrate information from several disciplines of biology (molecular, cellular, organismal, to populations, community, and ecosystem levels)
- Critically analyze and comprehend primary literature identify key ideas in, develop questions from, and lead discussion of current articles and reviews in the biology of these topics
- Challenge, motivate, and encourage students to learn and develop a life-long passion for biological concepts
- Become authorities among non-scientific peers on new developments in a dynamic field and fast-moving field
- Communicate important concepts and ideas on the biology of plant-animal interactions, biodiversity, human society, and health

**Students completing this course will:**

- Gain greater understanding about how plant and animal relationships shape life, biodiversity, and health.
- Demonstrate an integrated understanding of domains of biology (molecular, cellular, organismal, to populations, community, and ecosystem levels) in relation to the course theme.
- Comprehend and critically analyze primary and secondary literature.
- Develop oral and written communication skills.
- Reflect on and hone professional career development skills (i.e., the “soft skills” that will give you an advantage in the “work world”).

**PREREQUISITES:** Senior standing.

**INSTRUCTOR:**

Dr. Robert G. Laport  
Office: Boone 221A

Email: [rlaport@collegeofidaho.edu](mailto:rlaport@collegeofidaho.edu)  
Phone: 208-459-5292

Visiting hours: M 9:00a-10:00a & MWF 4:00p-5:00p and by appointment. All students should plan to visit with me at least once during the semester.

**COURSE TEXTS:** You are responsible for all reading assignments as indicated on the syllabus. Discussions will center on, and expand from, our readings of the main text. You are also responsible for all primary and pop sci reading assignments as they are determined by your peers throughout the semester. These will be distributed electronically throughout the semester. Texts can be expensive and difficult to obtain in a hurry. **If you need assistance obtaining the text, please reach out to me so that I can help ensure you are able to access the text.**

Whiteman, Noah. 2023. Most Delicious Poison: The story of Nature's Toxins—from Spices to Vices. Little, Brown Spark, New York. ISBN 9780316386579

Bibliography for the book:

<https://www.mostdeliciouspoison.com>

**CANVAS:** We will use Canvas for this course ([canvas.collegeofidaho.edu](https://canvas.collegeofidaho.edu)). The syllabus/policy, learning objectives, handouts, assignments, article readings, and announcements will be posted here. Check Canvas often, particularly to ensure that you are aware of upcoming due dates and exams, but you may also keep track of your grade in the course.

**PLICKERS:** We will use Plickers (“Paper Clickers”) as a classroom response method in this course. You will use your assigned barcode to respond to periodic in-class questions. Responses will count toward your final grade, so be sure to take note of your barcode number and bring your barcode every class and lab period. You may download a replacement barcode on Canvas or at [www.plickers.com](http://www.plickers.com).

**ACCESSIBILITY RESOURCES AND SERVICES:** My goal is to create an accessible, equitable, and inclusive classroom. The College of Idaho seeks to provide an educational environment that is accessible to the needs of students with disabilities. The College provides reasonable services to enrolled students who have a documented permanent or temporary physical, psychological, learning, intellectual, or sensory disability that qualifies the student for accommodations under the Americans with Disabilities Act or section 504 of the Rehabilitation Act of 1973. Students that have, or think they may have, a disability that will impact their performance as a student in this class are encouraged to arrange support services and/or accommodations through the Department of Accessibility and Learning Excellence (DALE) located in Hendren Hall. Reasonable academic accommodations may be provided to students who submit appropriate and current documentation of their disability. Accommodation can be arranged only through this process and are not retroactively applied. More information can be found on the DALE webpage: <https://www.collegeofidaho.edu/academics/support/learning-disability-services>

**COMMITMENT TO DIVERSITY:** The College of Idaho and The Biology Department are committed to creating an academic climate that is safe and respectful of all students, staff, and faculty regardless of race, ethnicity, sexual orientation, gender identity, age, size, socioeconomic background, religion, spirituality, physical ability, mental ability, or any other aspect of one’s identity. A climate of mutual respect allows us to ask difficult questions and to participate in honest discussions, even in the context of strong disagreement. Creating this kind

of open, honest, and respectful climate is our mutual responsibility. The Biology Department is continually seeking to understand how students and faculty—particularly those from historically excluded groups—experience our classrooms, and to provide actionable resources to support teaching approaches that promote equity and foster a sense of belonging. I encourage you to reach out to me or other Faculty in the Biology Department with any concerns or ideas you may have.

**SEXUAL MISCONDUCT DISCLOSURE:** I will do my best to help any student who comes to me with concerns. For emergencies, call 911 and/or Campus Safety at x5151 or (208) 459-5151. All faculty members are mandated to report any incidents of sexual misconduct that comes to their attention. The College has specific confidentiality and anti-retaliation protections in place. Health and Wellness Center Staff and the College Minister can advise you confidentially. Also, the Title IX Coordinator (Jodi Nafzger; [titleix@collegeofidaho.edu](mailto:titleix@collegeofidaho.edu); (208) 459-5139) can help you access other resources on campus and in the local community. The Sexual Misconduct Policy and other Title IX information can be found on the College website at: <https://www.collegeofidaho.edu/about/offices/human-resources/sexual-misconduct>.

**GRIEVANCES:** A student who has a grievance with any aspect of this course should meet with me to discuss the problem. If an honest and sincere dialogue cannot resolve the grievance, the student may make an appointment to discuss the problem with the Biology Department Chair as the appropriate next step.

**SCHEDULE:** This three-credit course meets three times weekly (M, W, F 3:00-3:50 pm) in Boone 216.

**CLASS ATTENDANCE:** This is a conversation/participation-based course. Attendance is essential to success and is expected of every student. Students must be registered by the end of the Drop/Add period to attend class (see academic calendar: <https://iq2prod1.smartcatalogiq.com/en/Catalogs/College-of-Idaho/current/Undergraduate-Catalog/The-College-of-Idaho-s-2022-2023-Academic-Calendar>). In the event of an absence, in-class handouts and slides will be provided. Notes must be obtained from a classmate. Students requiring accommodation for conflict(s) (e.g., major religious holidays, health issues) should notify me privately at the beginning of the semester or as soon as possible. Non-accommodated absences from more than two class periods is considered excessive and experience shows decreased course performance with increasing absences. Participation points cannot be made up.

This is an advanced course. Expect to spend a substantial amount of time on readings and completing assignments for this course. As in the world outside campus, you may be pushed out of your comfort zone. Some aspects may be tedious, others challenging. Use this opportunity to challenge yourself to grow and take risks.

Though some formal class time is aimed to assist you in completing independent projects, you will need substantial time outside of scheduled meetings to complete your projects. The skills you learn in this course will help lay a foundation for Biology-focused graduate programs and careers.

**ABSENCE ACCOMMODATIONS:** Reasonable accommodations and flexibility will be afforded to students who must be absent from class or lab because of religious holidays, college-sponsored activities, etc. Students are asked to privately identify all course conflicts at the beginning of the semester or well in advance of known absences.

**CAMPUS CLOSURES, INTERNET OUTAGES, AND OTHER BARRIERS TO NORMAL INSTRUCTION.**

In the event that the College is closed unexpectedly for inclement weather, or any other reason, students should expect a missed exam to be given during the next regularly scheduled class period. Similarly, widespread power or internet outages may also result in adjustments to the course and exam schedule. No oral presentations or exams will be administered prior to the scheduled times.

**PROFESSIONALISM:** It is expected that students adhere to the Honor Code and display a professionalism in class similar to that expected in the workplace. This pertains to attendance, participation, respect for others, engagement, organizational skills, initiative, responsiveness to feedback, personal responsibility, interpersonal skills, independence, quality of work, and communication.

**ASSESSMENTS:** Late assignments will be marked down 10% per week. Consult with Dr. Laport in advance if you anticipate an excused absence.

**PARTICIPATION AND CLICKER QUESTIONS (35%):** Students are expected to participate meaningfully to discussion every class period. Participation points will be assigned daily (3 points) for comments and questions that help move the discussion forward. This can be challenging, and should not simply be questions about what the reading is about. However, practicing these reasoning and problem-solving skills, and verbal and written communication skills will pay dividends in the future.

**PRIMARY LITERATURE PRESENTATION (20%):** Students will choose a primary journal article on a topic related to the book we are reading as a group that specifically addresses concepts and mechanisms at the population level or the cellular/molecular/physiological level. (1) Develop a list of questions that will help prepare everyone for classroom discussion. (2) You will lead a discussion of the article (about 25-30 minutes) after (3) giving a presentation that introduces the article to the class. The presentation should focus on providing background information relevant to the topic and breaks down the research article into its main components (i.e., big question, specific questions, methods, main findings, how do the findings help answer the big question). The presentation should be thoroughly researched (e.g. reference 5-8 other papers in the primary and secondary literature). The presentation should be about 10-15 minutes.

**SOURCE FOR PRIMARY LITERATURE ARTICLES (BIBLIOGRAPHY FOR THE BOOK):**

<https://www.mostdeliciouspoison.com>

**FACILITATION OF POP SCI LITERATURE DISCUSSION (15%):** Students will choose a popular science article, podcast, video, etc. on a topic of their choosing (ideally related to topics we are discussing in class, but this is not required). Students will facilitate an in-class discussion on the “article” by investigating background on the topic, presenting the overarching themes to the class and why it is important (i.e., big question, specific questions, potential methods, main results, and how the findings help address the big question). The main goal with this activity is to develop a life-long passion for science. Think of this as “Science for Voters” where you are the authority among your peer group responsible for cutting through the B.S. on issues that concern all of us. Let’s have some fun!

**EXAMPLE POP SCI ARTICLE SOURCES:** The Conversation, Science Daily, Science Friday, The New York Times, The Washington Post, The Economist, The Atlantic, Freethink, Ars

Technica, Vox, Phys.org, NPR, BBC, The Brain Scoop, The Guardian, Business Insider, I Fucking Love Science (IFLSscience), etc., etc., etc.

**INDEPENDENT PROJECT (15%):** Students will develop an independent project relevant to topics in the course. Projects will take the form of a “podcast,” video, animation, comic strip, commentary, ‘zine, song, using AI to understand biodiversity, etc. that communicates complex scientific ideas to a broader audience. Assistance will be provided, but this is your opportunity to develop and communicate a concept of interest to you. If you have a question that you have always wanted to explore in depth, let’s discuss how you could deliver this to a broader audience! Projects can begin at any time in the semester, but a proposal must be made by the midterm (25% of the project grade).

Projects require: 1) development of a proposal (approved prior to moving forward), 2) distribution of completed “podcast” to the class.

**COLLOQUIUM ATTENDANCE & WORKSHEETS (15%):** Students must attend 4 of the scheduled NSM Colloquia and complete associated worksheets on Canvas. Colloquium and Seminar presentations from invited speakers are a critical component of networking and making connections across your education. We often bring visitors onto campus for these talks, and it is important that we, as a group, make a great impression. We want to be professional, engaged, and respectful—in fact, future internship opportunities and job possibilities with our visitors may depend on how good an impression we make!

**GRADES:** Letter grades will be assigned as follows based on cumulative performance:

**GRADE BREAKDOWN:**

|                 |                 |                 |
|-----------------|-----------------|-----------------|
| >93.3% = A      | 80.0-83.3% = B- | 66.7-69.9% = D+ |
| 90.0-93.3% = A- | 76.7-79.9% = C+ | 63.4-66.6% = D  |
| 86.7-89.9% = B+ | 73.4-76.6% = C  | 60.0-63.3% = D- |
| 83.4-86.6% = B  | 70.0-73.3% = C- | < 60.0% = F     |

**INCOMPLETE GRADES:** Administration of an incomplete is at the discretion of the instructor. The grade of I (Incomplete) may be assigned when a student has met all of the following conditions:

The student has attended class through the final withdrawal date in accordance with the course attendance policy. The last date of attendance should occur after the withdraw deadline.

The student has completed the majority of possible coursework at the point in time and is in good standing, having earned C- or better.

When the instructor believes the student’s inability to complete the course is due to legitimate causes beyond the student’s reasonable control (such as an illness or traumatic event occurring after the final withdrawal date).

The instructor and student must submit an Incomplete Grade Contract to the Registrar’s Office before the last day of finals in the semester in which the student is registered for the course. Final approval for the incomplete is at the discretion of the Registrar, providing that the student meets the conditions listed above. All work for the course must be completed by the first week of the following semester.

**ACADEMIC HONOR CODE SYSTEM AND ACADEMIC DISHONESTY:** I aim to create a supportive, collegial, and intellectually encouraging environment in my courses. The College of Idaho maintains that academic honesty and integrity are essential values in the educational process. Operating under an Honor Code philosophy, the College expects conduct rooted in honesty, integrity, and understanding, allowing members of a diverse student body to live together and interact and learn from one another in ways that protect both personal freedom and community standards. Violations of academic honesty are addressed primarily by the instructor and may be referred to the student Judicial Board:

<http://collegeofidaho.smartcatalogiq.com/current/Undergraduate-Catalog/Policies-and-Procedures/Academic-Misconduct>

Academic dishonesty is defined as the use of unauthorized assistance with intent to deceive, or to misrepresent the work of another as their own, in meeting course and degree requirements. Academic dishonesty consists of plagiarism, cheating, fabrication and falsification, multiple submission of the same work, misuse of academic materials, and complicity in academic dishonesty (see below). All work in this class is to be completed independently, unless otherwise indicated. Non-compliance will result minimally in a grade of zero for that effort, documentation of the episode, and disciplinary action as set forth by College policy, with penalties ranging from failure of this course to dismissal from the College.

Examples of academic dishonesty include, but are not limited to:

**A. Plagiarism:** Plagiarism is the use of another person's distinctive words or ideas without acknowledgment.

Examples include:

1. Word-for-word copying of another person's ideas or words
2. The mosaic (interspersing of one's own words here and there while, in essence, copying another's work)
3. The paraphrase (rewriting of another's work, yet still using their fundamental idea or theory)
4. Fabrication of references (inventing or counterfeiting sources)
5. Submission of another's work as one's own, including AI-generated responses (e.g., ChatGPT)
6. Neglecting quotation marks on material that is otherwise acknowledged

NOTE: Acknowledgment is not necessary when material used is common knowledge.

**B. Cheating:** Cheating involves the possession, communication, or use of information, materials, notes, study aids or other devices not authorized by the instructor in an academic exercise, or communication with another person during such an exercise. Examples include:

1. Copying from another's paper or receiving unauthorized assistance from another during an academic exercise or in the submission of academic material
2. Using a calculator or other electronic device when its use has been disallowed
3. Collaborating with another student or students during an academic exercise without the consent of the instructor.

**C. Fabrication and Falsification:** Fabrication involves inventing or counterfeiting information, i.e., creating results not obtained in a study or laboratory experiment. Falsification, on the other hand, involves the deliberate alteration of results to suit one's needs in an experiment or other academic exercise.

**D. Multiple Submissions:** This involves submitting work for which academic credit has already been earned, when such submission is made without instructor authorization.

**E. Misuse of Academic Materials:** The misuse of academic materials includes, but is not limited to:

1. Stealing or destroying library or reference materials or computer programs
2. Stealing or destroying another student's notes or materials, or having such materials in one's possession without the owner's permission
3. Receiving assistance in locating or using sources of information in an assignment when such assistance has been forbidden by the instructor
4. Illegitimate possession, disposition, or use of examinations or keys to examinations
5. Unauthorized alteration, forgery, or falsification
6. Unauthorized sale or purchase of examinations, papers, or assignments

**F. Complicity in Academic Dishonesty:** Complicity involves knowingly contributing to another's acts of

academic dishonesty. Examples include:

1. Knowingly aiding another in any act of academic dishonesty
2. Allowing another to copy from one's paper for an assignment or exam
3. Distributing test questions or information about test materials before the assessment
4. Taking an exam or test for someone else
5. Signing another's name on attendance roster or on an academic exercise

**EXAMPLE STRATEGIES FOR SUCCESS:** Following are suggestions that students have found useful in the past for ensuring success in this course:

- Review your notes shortly after each lecture or lab— the sooner the better. Rewrite them, or at least annotate them. Write down all questions and have an instructor address them during the next class period.
- Read assignments promptly. Each week you will be responsible for substantial readings. Set aside one or two hours each week to complete the readings. Interact with your texts. Write in them! Highlight them!
- Email Dr. Laport before the second meeting of class with “Barbara McClintock” in the subject line once you have read the syllabus for two bonus points.
- Form a study group of your peers for regular, if only brief, meetings.
- Utilize office hours and appointments. Come prepared with questions.

| TENTATIVE SCHEDULE |                                                                                       |                        |
|--------------------|---------------------------------------------------------------------------------------|------------------------|
| Date               | Topic                                                                                 | Other Important Events |
| 5-Feb              | Introduction to the course, Preparing for the Senior Comprehensive Exam (MFT) BIO 499 |                        |
| 7-Feb              | Most Delicious Poison: Introduction & Chapter 1: Deadly Daisies                       |                        |
| 9-Feb              | Botany of Desire: Intoxication/Marijuana                                              |                        |
| 12-Feb             | Most Delicious Poison: Chapter 2: Forest of Phenolics and Flavonoids                  |                        |
| 14-Feb             | Paper presentation:                                                                   |                        |
| 16-Feb             | PopSci Friday!:                                                                       |                        |
| 19-Feb             | Most Delicious Poison: Chapter 3: Toxic, Titillating, Tumor-Killing Terpenoids        | NSM Colloquium         |
| 21-Feb             | Paper presentation:                                                                   |                        |
| 23-Feb             | PopSci Friday!:                                                                       |                        |

|        |                                                                                        |                |
|--------|----------------------------------------------------------------------------------------|----------------|
| 26-Feb | Most Delicious Poison: Chapter 4: Dogbane and Digitalis + Chapter 5: Hijacked Hormones |                |
| 28-Feb | Paper presentation:                                                                    |                |
| 1-Mar  | PopSci Friday!:                                                                        |                |
| 4-Mar  | Paper presentation:                                                                    | NSM Colloquium |
| 6-Mar  | Paper presentation:                                                                    |                |
| 8-Mar  | PopSci Friday!:                                                                        |                |
| 11-Mar | Most Delicious Poison: Chapter 6: Abiding Alkaloids                                    |                |
| 13-Mar | Paper presentation:                                                                    |                |
| 15-Mar | PopSci Friday!:                                                                        |                |
| 18-Mar | Most Delicious Poison: Chapter 7: Caffeine and Nicotine                                | NSM Colloquium |
| 20-Mar | Paper presentation:                                                                    |                |
| 22-Mar | PopSci Friday!:                                                                        |                |
| 25-Mar | Spring Break                                                                           |                |
| 27-Mar | Spring Break                                                                           |                |
| 29-Mar | Spring Break                                                                           |                |
| 1-Apr  | Most Delicious Poison: Chapter 8: Devil's Breath and Silent Death                      |                |
| 3-Apr  | Paper presentation:                                                                    |                |
| 5-Apr  | PopSci Friday!:                                                                        |                |
| 8-Apr  | Most Delicious Poison: Chapter 9: Opioid Overlords                                     | NSM Colloquium |
| 10-Apr | Paper presentation:                                                                    |                |
| 12-Apr | PopSci Friday!:                                                                        |                |
| 15-Apr | Most Delicious Poison: Chapter 10: The Herbivore's Dilemma                             |                |
| 17-Apr | Paper presentation:                                                                    |                |

|        |                                                                                                            |                                                          |
|--------|------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|
| 19-Apr | PopSci Friday!:                                                                                            |                                                          |
| 22-Apr | Most Delicious Poison: Chapter 11: The Spice of Life                                                       | <b>MFT</b><br>NSM Colloquium<br>23 April Henberg Lecture |
| 24-Apr | Paper presentation:                                                                                        |                                                          |
| 26-Apr | PopSci Friday!:                                                                                            |                                                          |
| 29-Apr | PopSci Friday...on a Monday!:                                                                              | <b>MFT</b>                                               |
| 1-May  | Paper presentation:                                                                                        |                                                          |
| 3-May  | PopSci Friday!:                                                                                            |                                                          |
| 6-May  | Most Delicious Poison: Chapter 12: Nutmeg, Tea, Opium, and Cinchona + Chapter 13: The Future Pharmacopoeia | <b>MFT</b><br>NSM Colloquium                             |
| 8-May  | Paper presentation:                                                                                        |                                                          |
| 10-May | PopSci Friday!:                                                                                            |                                                          |
| 13-May | “Podcasts” Due                                                                                             |                                                          |
| 15-May | Paper presentation:                                                                                        |                                                          |
| 17-May | PopSci Friday!:                                                                                            |                                                          |

**AT LEAST ONE WEEK BEFORE YOUR ARTICLE PRESENTATION DATES:**

- **Select a primary or Pop Sci article related to your topic. You must have the article approved by Dr. Laport one week before your article presentation.**
- **Develop a list of 5-8 questions for your chosen article that you can use to motivate class discussion and enhance understanding of the content/findings. The questions are to guide your peers through the article and prompt everyone to think critically about its contents and how it relates to biology of our class themes. Please provide the articles to Dr. Laport along with the list of questions 3 days ahead of time (they will be posted on Canvas for the class).**
- **Email Dr. Laport your answers to the questions one day before the discussion.**

PowerPoint presentation (30 points)

\_\_\_\_\_ / 10 pts: Presentation of topic & background information provides clear context needed to comprehend the purpose, methods, results, and discussion of the paper

\_\_\_\_\_ / 10 pts: Thoroughly researched (references 5-8 primary articles and other appropriate resources)

\_\_\_\_\_ / 10 pts: Presentation mechanics (images are large enough to see, slides contain appropriate images/figures, very little reading from slides during presentation, major points are clearly explained)

Leading paper discussion (30 points x 2, one primary and one pop sci article)

\_\_\_\_\_ / 10 pts: Study guide questions ensure that other students understand relationship between motivation of the study, specific questions of study, the approach taken, and how the results are either consistent with or not consistent with the hypotheses. Study guide questions lead students to work through the important points of the paper

\_\_\_\_\_ / 5 pts: Study guide questions are provocative, critical, and analytic, not just interpretive

\_\_\_\_\_ / 10 pts: Explanations and answers to peers' questions in class discussion demonstrate thorough and accurate understanding of paper

\_\_\_\_\_ / 5 pts: Ability to generate discussion