

# CAPSTONE SEMINAR IN BIOLOGY (BI 499)

## Birmingham-Southern College

### Course Syllabus – E-Term 2022

**INSTRUCTOR:** Jason L. Heaton, PhD  
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**CLASS MEETING TIME:** MTWR, 9:00AM – 12:00PM

**Office Hours:** By appointment (email for times)

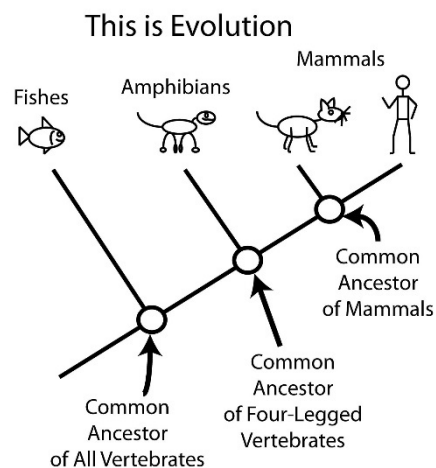
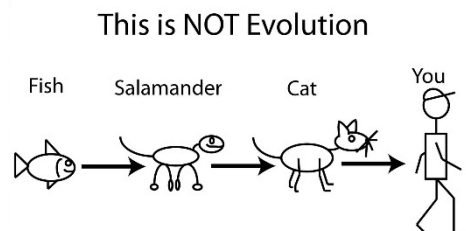
**Course Description:** BI 499 is the second half of the senior capstone experience in Biology at BSC. This course should be taken either after (preferably) or concurrent (under extreme circumstances) with a research-intensive course or experience. BI 499 will use your research experience as a foundation for in-depth exploration of the scientific literature; application of the fundamental concepts of biology to interpret, analyze, and summarize biological data; communication of scientific findings to diverse audiences; and articulation of the importance of scientific research to other disciplines and to society more broadly. Also as a part of this course, you will reflect on your own growth as a scientist and consider how what you have learned as a biology major at BSC will contribute to your future as a professional and member of society.

**Course Goals:** By the end of this course, students should be able to:

- apply the process of science
- demonstrate critical thinking and quantitative reasoning
- communicate and collaborate with other scientists
- articulate the relationship between science and society
- demonstrate knowledge of the core concepts of biology

To achieve these goals, as a part of this course, you will

- a. Present and lead a discussion focused on a research article chosen by the Biology faculty,
- b. Actively participate in class discussions of other research papers,
- c. Develop and present a seminar that provides an overview of your capstone research project,
- d. Research and reflect on the importance of scientific research to society,
- e. Reflect on your own growth as a scientist throughout your college experience, and
- f. Take a concept inventory exam on the central concepts of biology.



Modified from:  
[matthewbonnan.wordpress.com](http://matthewbonnan.wordpress.com)

## Course Policies:

### 1. Course Work and Evaluation:

<u>Component</u>	<u>Points</u>
<b>A. Journal Club</b>	
Journal Club Presentation	100
Journal Club Worksheets (5@20 pts each)	100
<b>B. Capstone Seminar</b>	
Slide Deck Draft	20
In-class Practice Presentation	50
Senior Conference Presentation	100
<b>C. Reflection on Growth</b>	
Resume Rough Draft	20
Resume Final Draft	50
Reflections on Professional Growth Paper	60
Senior Exit Survey	20
<b>D. Concept Inventory Exam</b>	100
<b>E. Personalized assignments 1-3</b>	60
<b>F. Attendance, Attitude, and Participation</b>	
Attitude and Participation	45
<b>Total</b>	<b>725</b>

#### A. Journal Club:

Each student will be assigned a Journal Club Article. Before each journal club the class will read the article, complete the journal club worksheet, and develop questions for the upcoming journal club. Although class time will be dedicated to preparation of journal club presentations, students should spend significant out of class time preparing as well. During the journal club, the presenters will have 45 minutes to present the paper and facilitate an exploration and critical review of the study. Presenters will be evaluated by both the instructor and by the students.

Following each journal club presentation, the class will discuss how the research is relevant to the presenters' area of planned career specialty, or relevancy to the senior capstone research experience.

#### B. Senior Capstone Seminar

Each student will make a formal, digital (e.g. PowerPoint), oral presentation of his/her capstone research project to the rest of the class, and then to the broader BSC community during the Biology Senior Conference at the end of the term. The class presentation will be evaluated by a

combination of instructor and peer evaluation. Following the class presentation, both students and the instructor will offer real-time feedback on the presentation so that presenters can improve their talk for presentation at senior conference. The final senior conference presentation will be evaluated by just the instructor.

**Draft slide deck:** The PowerPoint presentation must be uploaded to Moodle by the due date listed on the class schedule. Your instructor will provide feedback on the content and design of the proposed presentation prior to your class presentation. Your grade from the instructor will be based in part on adjustments to your slides based on that feedback.

**Oral Presentations—In-class practice and Senior Conference:** The goal of the presentation is to explain the proposed research at a level that is understandable to a broad audience including your classmates and your instructor, not just specialists in a given sub-discipline of biology. Design it as if you were presenting to chemistry or math majors. Tips on for being successful with this assignment are posted on Moodle. The presentation should be approximately 12 minutes long, followed by 3 minutes of discussion and questions.

### **C. Reflection and Preparing for Career**

Clearly there's a lot more to a successful career and a fulfilling life than what you've learned in the classroom. Issues of work/life balance, navigating the workplace, and managing your finances are just a few of many complex issues that you will confront as you join the workforce. Issues normally considered "personal" often impact your "professional" life. These are just as, if not more, influential on your success than your science knowledge and skills. We will take time this semester to discuss some of these topics, and via a paper, you will reflect on what you learn about yourself and the challenges and opportunities that you will face.

Biology seniors in the past have asked for help with their resumes, so this will be one of our projects for the semester. You will learn about and build a chronological resume.

You will take time to reflect on and write about your professional growth here at BSC. This is a valuable skill that will translate into better personal statements for graduate/professional school, better cover letters for job applications, and better interviews as you move forward in your career.

An exit survey will provide an avenue for you to reflect on your time at BSC.

### **D. Concept Inventory Exam**

You will demonstrate your own learning as a BSC Biology major through a concept inventory that spans different aspects of biology.

### **E. Field-Trip to local science institution**

Based upon class interest, we will schedule a 3-hour visit to a local institution that communicates science to the public. This may include the McWane Science Center or the Birmingham Zoo. We will consider how they are communicating and whether it is effective. If not, we will discuss (as a group) ways in which the institution could better communicate. This trip will take place outside of our regularly scheduled class period.

### **F. Attendance, Attitude, and Participation**

Successful completion of this course requires active in-class participation. Therefore, attendance in the classroom is required. You are expected to arrive on time and to stay for the duration. Unlike classes that meet more frequently, missing one class session is the equivalent of missing an entire week of the semester. Thus, *excused absences will only be granted for appropriate, well-documented circumstances such as medical or family emergencies*. Unexcused absences could result in deduction of 80 points (5 points per class meeting) from the Attendance, Attitude, and Participation portion of your grade in this course.

Numerous pedagogical studies show that students learn best when actively participating. Keep in mind that everyone brings a unique background to the course, and you have the opportunity to learn from these diverse backgrounds. The role of a course instructor is to guide learning as students navigate the numerous diverse, dense, and immensely interesting topics of biology. Therefore, successful completion of this course requires your active and respectful participation. Students are expected to come to every class prepared and participate in the activities of that class. The more involved you are in this course, the more you and your classmates will benefit. Students will be warned in person and in writing before permanent deductions are taken for problems related to attitude or participation.

**BSC Honor Code, Academic Honesty and the Use of Turnitin.com:** All students in this course are expected to maintain academic integrity and uphold the BSC Honor Code at all times. **Specifically, in this course, the following are considered violations of the Honor Code: collaborating on work assigned for individual completion; plagiarism (ignorance is no excuse!); turning in work that is not your own; and lying.** Any violation of the honor code will be reported to the Honor Council and will result in a zero on that related assignment. Penalties imposed by the Honor Council are frequently academic probation, suspension, or expulsion. In addition, instances of plagiarism on any aspect of your proposal or draft proposal may result in a failing grade on that assignment.

1. We will use Turnitin.com via Moodle as a tool to educate students about what plagiarism is and how to avoid it by citing sources correctly. You should become very familiar with the issue of plagiarism and intellectual honesty. You need to visit the "TurnItIn Research Resources" webpage for information on how plagiarism is defined (<http://www.plagiarism.org/>). This will help you become a better writer and will benefit you in this course, other courses, and when writing in your career.
2. **Late assignments:** Any assignment may be turned in late for partial credit (up until a few days before grades are due). Work is considered late if not turned in at the beginning of class, or, when an assignment is due. You will lose 10% of the total possible points for each 24 hour period any assignment is late. These days include Saturday and Sunday. The maximum amount of points taken off will be 50% of the point value of the assignment. Thus, you should always turn in a late assignment, no matter how late it may be. An unexcused, undocumented class absence does not excuse work from late fees. An excused absence may warrant a deadline extension, at the discretion of the instructor.
3. **Communication:** See office hours posted above. We will be using Moodle throughout the semester in numerous ways (e.g., posting of reading assignments or important announcements). Thus, it is

important for you to begin using Moodle as soon as possible. In addition, email will be used to communicate important announcements, so you are expected to check your BSC email frequently.

4. **Cancellations & Time/Location Changes:** If class is cancelled or if there is a change in time or location of class for any reason, an email announcement will be sent and posted on Moodle and a sign posted on the classroom door as soon as possible. In the event that class is cancelled, you will also be expected to complete assignments due for the cancelled class.
5. **Cell Phones:** It should go without saying, but in consideration of all class participants, cell phones are not permitted for calls or texting in the classroom. Please turn your phone off before class or lab begins.
6. **Learning Accommodations:** Under the directives and guidance of the Americans with Disabilities Act (ADA) and Rehabilitation Act of 1973, we are committed to providing appropriate accommodations to meet the learning needs of disabled students. If you believe that you qualify for learning accommodations based official documentation, please contact me and appropriate learning accommodations in accordance with the recommendations can be arranged. It is critical that you contact me *within the first week* of the course so that I can make the appropriate arrangements. If you believe that you have a learning disability, but have not self-identified please contact the BSC Counseling and Health Services by calling x4717.

Date	Topic	Reading/Assignments due
Jan. 4	<ul style="list-style-type: none"> <li>Course Overview</li> <li>Charrette – wants/needs for class</li> <li>Journal Club (JC) team assignments</li> <li>Teams begin work on paper selection</li> </ul>	<b>Due:</b> upload pdfs of 3 possible discussion papers (by <b>midnight</b> )
Jan. 5	<ul style="list-style-type: none"> <li>Instructor-led Journal Club</li> <li>Resume Workshop I: What employers want</li> </ul>	<ul style="list-style-type: none"> <li>Read/study the JC paper for class discussion</li> <li><b>Due:</b> JC Worksheet<sup>1</sup></li> <li>Resume-Writing workshop readings</li> </ul>
Jan. 6	<ul style="list-style-type: none"> <li>Elements of a good presentation</li> <li>Senior conference times (survey)</li> </ul>	<ul style="list-style-type: none"> <li>Review “Organizing a 12 min talk” slides on Moodle</li> </ul>
Jan 10	<ul style="list-style-type: none"> <li><b>No Class Meeting:</b> Work on Presentation</li> </ul>	
Jan 11	<ul style="list-style-type: none"> <li>Student-led Journal Clubs 1 &amp; 2</li> <li>Resume Workshop II: Peer Review</li> </ul>	<ul style="list-style-type: none"> <li><b>Due:</b> Journal Club Worksheets<sup>1</sup></li> <li><b>Due:</b> Post draft resume to Moodle<sup>1</sup></li> </ul>
Jan 12	<ul style="list-style-type: none"> <li>Student-led Journal Clubs 3 &amp; 4</li> <li>Discussion I: Work/life balance</li> </ul>	<ul style="list-style-type: none"> <li><b>Due:</b> Journal Club Worksheets<sup>1</sup></li> <li><b>Due:</b> Final Resumes due on Moodle<sup>2</sup></li> </ul>
Jan 13	<ul style="list-style-type: none"> <li>Discussion II: The Money Issue</li> <li>Draft Slide Deck Peer Review</li> </ul>	<ul style="list-style-type: none"> <li><b>Due:</b> Senior Conference Draft Slide Deck<sup>1</sup></li> </ul>
Jan 17	<ul style="list-style-type: none"> <li><b>No Class Meeting (MLK)</b></li> </ul>	<ul style="list-style-type: none"> <li><b>Due:</b> Personalized assignment I<sup>1</sup></li> </ul>
Jan 18	<ul style="list-style-type: none"> <li>Concept Inventory Exam</li> </ul>	
Jan 19	<ul style="list-style-type: none"> <li>Discussion III: What do I do NOW? (right after college)</li> </ul>	<ul style="list-style-type: none"> <li><b>Due:</b> Personalized assignment II<sup>1</sup></li> </ul>
Jan 20	<ul style="list-style-type: none"> <li>Discussion IV: Communicating Science Widely (e.g., social media and news outlets)</li> </ul>	<ul style="list-style-type: none"> <li><b>Due:</b> Science Communication Exercise (by <b>Friday, midnight</b>)</li> </ul>
Jan 24	<ul style="list-style-type: none"> <li>Senior Conference Class <b>Practice Presentations</b> (Day 1)</li> <li>How to write an email (for Pers. Assig. III)</li> </ul>	
Jan 25	<ul style="list-style-type: none"> <li>Senior Conference Class <b>Practice Presentations</b> (Day 2)</li> <li>Course Evals</li> <li>Senior Exit Survey</li> </ul>	
Jan 26	<ul style="list-style-type: none"> <li>Individual Meetings with Professor</li> </ul>	<ul style="list-style-type: none"> <li><b>Due:</b> Reflection on Professional Growth</li> <li><b>Due:</b> Senior Exit Survey confirmation</li> </ul>
Jan 27	<ul style="list-style-type: none"> <li>Senior Conference Presentations</li> </ul>	<ul style="list-style-type: none"> <li><b>Due:</b> Upload final PowerPoints<sup>1</sup> by 9 am</li> </ul>

Note: Assignments noted as **Due** are either due by before class<sup>1</sup> or by midnight<sup>2</sup> on the due date shown.