

BI493, BIOLOGY RESEARCH EXPERIENCE, Fall 2025, 4 credits, Section M1

Students find, read, interpret, and analyze primary scientific literature in the context of a research project. Students will design and conduct one or more small scale experiments related to the research question and present the results and conclusions in oral and written professional presentation formats.

Class: MWF 11:30-12:15, CSA 308
Lab BI493L: F 1:00-3:50, CSA 111
Professors: Dr. Brittany Damron
Email Address: brittany.damron@wilmington.edu*
Office: CSA116
Office Hours: see schedule at end of syllabus.
Office Phone: 937-481-2216 (BD)
Required Materials: Gilbert et al. 2007. Asking questions in biology: A guide to hypothesis testing, experimental design and presentation in practical work and research projects. 3rd edition. Pearson Education Limited.
Knisely, Karin. 2017. A student handbook for writing in biology, 5th edition. Sinauer Associates, Inc., Sunderland, MA.
***preferred method of contact**

Course Goals:

1. Ability to find, understand and use primary literature, including using computerized literature databases, acquiring full text resources, choosing best sources and using proper attribution.
2. Understand basic principles of scientific research, including laboratory safety, research ethics, quantitative data manipulation and data interpretation and funding methods.
3. Conduct a model research project, using project-appropriate methods, and learning the skills of working with living organisms, time management and teamwork.
4. Present research project results with an understanding of the publication process, in both written and oral forms using discipline-appropriate techniques.

Writing Skill Development: This course is designated as a “W” course, meaning that it will focus on developing writing skills in students and that 25% of the grade will be determined by assessment of these skills. The goal is that Wilmington College graduates will use the writing process in order to write a cogent, well-organized essay that argues a creative thesis, provides sufficient support, displays critical thinking, and employs a recognized format to cite all sources. They will also demonstrate mastery of writing appropriate to their respective disciplines.

Upper-level courses designated as a “W” course require:

- Weekly informal or formal writing assignments must be included as a part of course requirements. These may include short (1-2 page) essay responses, questions for class discussion, or reflections upon course content. They may also be directed towards stimulating class discussion and building the skills necessary for a longer, sustained writing project.
- A minimum of one formal paper must be a minimum of 8 pages in length and include a research component and integration of secondary source materials. This paper must incorporate work from scaffolded assignments (i.e., drafts, outlines, pre-writes, etc. that may have been part of earlier informal writing). The instructor must give written feedback on at least one draft or scaffolding element.
- A project that includes at least 1,750 words (approximately 7 double-spaced pages) of original student writing. This project must also undergo scaffolding exercises/drafts/revision. It could be a formal paper but may be any type of creative project that incorporates writing.

Some Important Dates:

Fri, August 22 - Last day to add/drop class.

Mon, Sept 29 – Research proposal

Fri, Oct 17 – FINAL Annotated bibliography due Tue, Oct 21 - Last day to withdraw from class with a “W”

Mon, Dec. 1 – Poster due.

Wed, Dec. 3 - Final research report due

General Information:

Important course announcements will be made in class and posted on course page. It is expected that you will check your emails at least once every 24 hours during the semester. A minimum of three hours of student work per week is expected for each credit hour awarded for the class. This means that students enrolled in an online 4 credit hour course over a full semester should anticipate spending at least 12 hours of work each week outside of schedule class time to complete the requirements of the course.

Doing and learning science requires time outside of specified class time. For this course, you will be performing scientific experiments. Doing science does not always fit conveniently into a schedule and can sometimes require unexpected, lengthy tasks. It is imperative that you properly plan for experiments and projects, which may require commitment during weekend and evening times. If a project fails due to inadequate planning or improper care, you will receive a zero for any related assignments. Please contact your mentor as soon as any issues arise to assure success in your experiments.

You absolutely must take an active role in your learning to be successful in this course. The professors will be available by appointment during office hours and other times, through email, by phone and through the course page to answer any questions you have concerning assignments, course content and your progress. There is one guarantee for this course; if you start off with a true commitment to do well, question the professors at every opportunity, be prepared, plan ahead, meet deadlines, and study hard, you will pass this course with no trouble.

Grading System:

Grades will be based on:

Literature presentation	100
Research proposal	100
Annotated bibliography	75
Research paper	200
Research presentation	100
Poster presentation	100
Research tasks and participation	150
Homework assignments	100
Laboratory notebook	75
<hr/>	
Total Possible Points:	1000

Points earned will be added and grades will be assigned based on the scale below. Do not expect any "curving" of grades in this course. From the *Wilmington College Faculty Handbook*: "It is the policy of Wilmington College to strive to fairness in grading and avoid grade inflation. Faculty are encouraged to regard 'C-' as a satisfactory grade, which means the student is meeting College standards, and will treat it as such in talking with students. The grade of 'A' on the other hand, should mean outstanding achievement, with a grade of 'B' in between. The grade 'D' represents minimally acceptable achievement, and the grade 'F' indicates failure."

Letter grade and points

A = 920-1000, A- = 900-919
B+ = 870-899, B = 820-869, B- = 800-819
C+ = 770-799, C = 720-769, C- = 700-719
D+ = 670-699, D = 600-669
F = < 600

Meaning of grade (from WC Handbook)

Range of outstanding achievement
Range of good achievement
Range of average achievement
Range of below average achievement
Inadequate achievement

Assignments:

Assignments should be completed throughout the semester. It is your responsibility to keep track of assignment due dates and assure that your homework is submitted on time. Be certain to leave yourself extra time in case of computer or other unavoidable problems; try not to wait until a few hours before the due date to complete any computer assignments.

If extreme and unavoidable circumstances occur that make unable to turn in an assignment on time, you must work with the appropriate professor to extend any deadlines. If arrangements have not been made prior to the due date, no late assignments will be accepted except under documented extraordinary circumstances. You must have documented proof of these unusual circumstances.

Writing assignments:

There are three major writing assignments due - the research proposal, the annotated bibliography and the final research paper.

Presentation assignments:

There are two oral presentations – one detailing the background, methods, and results of a primary scientific research article and a second detailing the background, methods and results of the independent research project. There is also a poster presentation for the final exam session.

Attendance/Absence/Behavior Policy:

Attendance at the entire lab period on Friday is mandatory. If you are scheduled to do lab work outside of the lab period, you are expected to attend as scheduled as well. You may miss only one lab period or portion thereof in the entire semester without penalty. For each lab (or portion thereof) that you miss after one absence, 15 points will be deducted from your lab attendance points, regardless of the excuse. If you miss a lab where a presentation or assignment is due, you will receive a zero for the presentation and assignment, unless you make arrangements to turn in the assignment late with the appropriate professor prior to your absence.

Students are expected to actively participate in laboratory and lecture activities and will be graded on their level of participation and preparation for each class. Students are expected to exhibit appropriate classroom etiquette, including, but not limited to, listening attentively when a professor or another student is speaking, raising your hand before speaking, arriving to class on time and turning off cell phones. In addition, students are expected to clean their laboratory area and return laboratory materials to the appropriate location prior to leaving lab. Points will be deducted from participation points for inadequate participation or improper classroom/lab etiquette.

There will be learning activities and quizzes in lecture. If you miss a class in which these unannounced activities are administered without a documented valid excuse (see below), you will not be able to make up the points and will receive a zero. Students are responsible for getting information from other students or from the professor on what material they have missed from a lecture or laboratory, whether the absence is excused or unexcused.

There are only a total of four excused absences in lecture (see above policy for lab) that can occur in the semester without penalty. All excused absences must be documented. The College accepts these four categories of excused absences:

- 1) Activities in which the student serves as an official representative of the College (e.g., musical performances, athletic contests, field trips)
- 2) Personal illness, with documentation by the College nurse or a physician, if possible. Students experiencing COVID-19 symptoms or in quarantine due to exposure to COVID-19 are also excused and will not be penalized for not attending physical classes
- 3) Family or personal emergencies
- 4) When severe weather makes travel to campus dangerous

Should any student feel ill at any time during the semester it is important to contact the college nurse (wchealthcenter@wilmington.edu , 937-481-2217) immediately. They will determine if testing, isolation or quarantine are necessary. If the nurse, or some other health authority, indicates the need to isolate or quarantine, your faculty will be notified through the Office of Academic Affairs of the dates of excused absences, once confirmed by the school nurse. It is, however, **YOUR RESPONSIBILITY** to contact your professor immediately in order to determine how best to maintain engagement with course content and assignments during your absence. You should not attend any in-person class if you are displaying symptoms of a cold, flu or COVID19 and should be cleared by the college nurse before leaving any isolation or quarantine.

Academic Integrity and Plagiarism:

See the current Student Handbook for the college's Academic Integrity policies as they pertain to examinations, plagiarism, classroom behavior, and the process for handling academic misconduct charges. Students are expected to understand and adhere to the Academic Integrity Policy in the Student Handbook and will be reported to The Office of Academic Affairs if a violation occurs. If it is your first academic integrity offense at the College, you will receive a zero on the relevant assignment(s). If it is your second academic integrity offense at the College, you will receive an F in the entire course. Students with academic integrity violations may not be eligible for academic awards and honors (i.e., Academic Honors, Dean's List/Merit List, Green Key Honor Society, Quaker Impact Award, and other Honorary Societies).

Plagiarism is defined as the representation of another's words, ideas, concepts, research or creative production without proper attribution whether intentional or unintentional. It is the student's responsibility to be informed about what constitutes plagiarism. Plagiarism can occur in the submission of one's own work or in work submitted by a group.

Examples of plagiarism include the following:

- The submission of a paper not one's own, including turning in a paper that has been purchased from a commercial research firm or obtained from the internet
- Copying word for word information without quotation marks
- Paraphrasing information (that is, the use of one's own words with only minor changes to the original)
- Use of information not considered general knowledge without proper citation
- Listing of misleading or false sources on a reference page
- The use of a paper or project for one course that was previously submitted for another course, either at Wilmington or at any other institution

Plagiarism is a serious academic offense and carries serious academic consequences. Violations will be recorded by the Associate Vice President of Academic Affairs.

When a professor discovers plagiarism, the professor will first consult with the Associate Vice President of Academic Affairs in order to determine if the student is a first-time offender. For first offenses, the student will receive a zero on the assignment. For a second offense or more, the Associate Vice President of Academic Affairs will report the offense to the academic standards and appeal committee and gather evidence for a hearing with the student. It is possible that the student will receive a substantial reduction in grade for the course or will fail the course. Multiple instances could even lead to suspension or expulsion from Wilmington College.

There are many university, college and private websites students may consult about how to avoid plagiarism. Sites with particularly helpful suggestions can be found at:

<http://owl.english.purdue.edu/owl/resource/589/01/>

<http://www.indiana.edu/~wts/pamphlets/plagiarism.shtml>

<http://www.writing.utoronto.ca/advice/using-sources/how-not-to-plagiarize>

<http://www.princeton.edu/pr/pub/integrity/08/intro/index.htm>

http://www.plagiarism.org/plag_article_preventing_plagiarism_when_writing.html

<http://citationmachine.net/index2.php>

Generative Artificial Intelligence:

You are not permitted to use generative AI tools for any work in this course. This includes the use of popular tools like ChatGPT, Midjourney, GitHub Co-Pilot, as well as all other tools built on generative AI technologies. Due to the nature of this course, work can only be fairly and accurately evaluated if student writing has NOT been assisted by generative AI. Use of generative AI for assignments in this course will be considered a violation of the College's academic integrity policies. Assigned reading and corresponding written assignments in this course are designed to develop independent skills and thoughtful perspective through reflective technical writing. Use of AI undermines that work, its purpose, and ultimately any benefit that it could provide towards students' learning experience. Therefore, the use of any generative AI to help with any assignments will be considered cheating/plagiarism and will be graded and handled accordingly.

Third-Party Software and FERPA Policy

During this course you might have the opportunity to use public online services and/or software applications sometimes called third-party software such as a blog or wiki. While some of these could be required assignments, you need not make any personally identifying information on a public site. Do not post or provide any private information about yourself or your classmates. Where appropriate you may use a pseudonym or nickname. Some written assignments posted publicly may require personal reflection/comments, but the assignments will not require you to disclose any personally identity-sensitive information. If you have any concerns about this, please contact one of your professors.

Copyright Policy

This course may contain copyright protected materials such as audio or video clips, images, text materials, etc. These items are being used with regard to the Fair Use doctrine in order to enhance the learning environment. Please do not copy, duplicate, download or distribute these items. The use of these materials is strictly reserved for this online classroom environment and your use only. All copyright materials are credited to the copyright holder.

Americans with Disabilities Act

In accordance with ADA, Wilmington College provides reasonable accommodation to students with physical and mental disabilities. If you have a documented disability that requires accommodation, please notify the Disability Services Director at (937) 481 – 2444, Robinson Communication Center 111 during business hours and one of the professors by the end of the first class.

Schedule of Classes:

Note: The course content may be modified as required, at the professors' discretion (e.g. change of pace, change in chapter readings, change in laboratory exercises, etc.). Such changes will be announced in class and posted on the course website via announcements, with an updated schedule reflecting any changes.

Week	Date	Topic	Reading	Laboratory Activity
1	M, Aug 18 W, Aug 20 F, Aug 22	Introduction to class Using library databases What is science?	Ch. 1	Laboratory safety and lab notebooks
2	M, Aug 25 W, Aug 27 F, Aug 29	Forming hypotheses & design Presenting a scientific paper Annotated bibliography	Ch. 2	Review and finalize paper choices
3	M, Sept 1 W, Sept 3 F, Sept 5	LABOR DAY HOLIDAY Writing a proposal Interpreting results	Ch. 3	Research tasks MUST CREATE SUPPLIES ORDER ASAP!!!!!!
4	M, Sept 8 W, Sept 10 F, Sept 12	Student paper presentation Student paper presentation Student paper presentation		Research tasks
5	M, Sept 15 W, Sept 17 F, Sept 19	Student paper presentation Student paper presentation Research tasks		Research tasks
6	M, Sept 22 W, Sept 24 F, Sept 26	Research tasks Experimental design Research tasks		Research tasks
7	M, Sept 29 W, Oct 1 F, Oct 3	Proposal due Research tasks Proposal peer review		Research tasks
8	M, Oct 6 W, Oct 8 F, Oct 10	Making graphs Using Excel Research tasks		Research tasks
9	M, Oct 13 W, Oct 15 F, Oct 17	FALL BREAK Statistics Annotated bibliography due		Research tasks
10	M, Oct 20 W, Oct 22 F, Oct 24	Writing research reports Methods due and peer review Research tasks		Research tasks
11	M, Oct 27 W, Oct 29 F, Oct. 31	Research tasks Research tasks Research tasks		Research tasks
12	M, Nov 3 W, Nov 5 F, Nov 7	Presenting research – the talk Presenting research – the poster Research tasks		Research tasks

Week	Date	Topic	Reading	Laboratory Activity
13	M, Nov 10	<i>Results due</i>		Research tasks
	W, Nov 12	Fuhrman/Pohlen presentations		
	F, Nov 14	Duniver/Yakes presentations		
14	M, Nov 17	Muse/Zeuch presentations		Lab Clean-Up
	W, Nov 19	Beery/Wolfe presentations		
	F, Nov 21	<i>Research paper due</i>		
15	M, Nov 24	Peer review		NO LAB
	W, Nov 26	THANKSGIVING HOLIDAY		
	F, Nov 28	THANKSGIVING HOLIDAY		
16	M, Dec 1	<i>Research poster due</i>		NO LAB
	W, Dec 3	<i>Final research paper due</i>		

FINAL EXAM (Poster Presentation) – FRIDAY, DECEMBER 5, 10:15 AM-12:15 PM

Wilmington College Mission Statement:

The purpose of Wilmington College is to educate, inspire, and prepare each student for a life of success and service.

To fulfill that purpose, Wilmington College provides a high quality undergraduate and graduate education shaped by the traditions of the liberal arts, career preparation, and the distinctive values of the Religious Society of Friends (Quakers). By offering academic programs, practical experience, and co-curricular activities in a variety of settings to students from diverse backgrounds, the College leads students to gain an awareness of the world, to acquire knowledge of career and vocation, and to seek truth and social justice.

In keeping with the rich heritage of the liberal arts, the College seeks to educate the whole person-intellectual, emotional, physical, and spiritual-in ways that foster critical thinking, reflection, the free exchange of ideas, open inquiry, tolerance, and a desire for lifelong learning. The liberal arts are integrated with career preparation to help students develop the knowledge and skills to succeed in a career or further education.

As an academic community, Wilmington College is rooted in historic Quaker values that include integrity, service, simplicity, equality, peace and social justice, and respect for all persons. These values motivate those who learn and work at Wilmington College to make positive contributions to their professions and their communities.

Semester Schedule:

Below is the Fall 2025 semester schedule for Brittany. The quickest way to reach Brittany is via email, or GroupMe messaging. Due to a **very busy** Fall 2025 schedule, Brittany will be working from home on Thursdays – meetings on Thursdays will only be done via zoom, unless it is necessary to be present in person to help this course's students. If you need to meet outside of office hours, you may also schedule an appointment (though availability is not guaranteed).

Damron schedule:

	Monday	Tuesday	Wednesday	Thursday	Friday
9:00AM	Animal Physiology BI340 9:10AM-9:55AM CSA	Office hours 9:00AM-12:30PM CSA 116	Animal Physiology BI340 9:10AM-9:55AM CSA	Meetings only by appointment 9:00AM-5:00PM Work from home	Animal Physiology BI340 9:10AM-9:55AM CSA
9:30AM					
10:00AM					
10:30AM	Anatomy and Physiology I HS344 10:20AM-11:05AM CSA		Anatomy and Physiology I HS344 10:20AM-11:05AM CSA		Anatomy and Physiology I HS344 10:20AM-11:05AM CSA
11:00AM					
11:30AM	Research Experience BI493 11:30AM-12:15PM CSA		Research Experience BI493 11:30AM-12:15PM CSA		Research Experience BI493 11:30AM-12:15PM CSA
12:00PM					
12:30PM	Office hours 12:30PM-1:00PM CSA 116		Office hours 12:30PM-1:00PM CSA 116		Office hours 12:30PM-1:00PM CSA 116
1:00PM	Animal Physiology Lab LAB 1:00PM-3:50PM CSA	Anatomy and Physiology LAB HS344L 1:00PM-3:50PM CSA	Anatomy and Physiology LAB HS344L 1:00PM-3:50PM CSA		Bio Research Lab BI493L 1:00PM-3:50PM CSA
1:30PM					
2:00PM					
2:30PM					
3:00PM					
3:30PM					
4:00PM					
4:30PM					
5:00PM	Human Nutrition BI131 5:00PM-8:00PM DCI		Human Nutrition BI131 5:00PM-8:00PM DCI		
5:30PM					
6:00PM					
6:30PM					
7:00PM					
7:30PM					
8:00PM					