

BIOL 320 – Discovering Biological Research

Fall 2024

Instructor: Dr. Simon Garnier (garnier@njit.edu)

Class meets: Monday & Wednesday, 11:30 am to 12:50 pm, in CKB 320

Description: Success in the constantly evolving field of biology necessitates staying current with the latest scientific advances and communicating them effectively to professionals and non-professionals. This requires competency in skills such as analysis of primary sources, synthesis of information from multiple sources, and oral and written communication. This course focuses on these competencies. Students will develop the skills needed to read and analyze scientific literature, and to communicate science effectively to a general audience. This course is a prerequisite for NJIT's Honors Capstone (Biol 495).

Learning expectations and assessment: This course is designed to introduce students to the process of doing scientific research in biology and enable them to find, read, and understand scholarly research that relates to their interests and assignments. During the first half of the course, class meetings will consist of lectures covering essential aspects of the scientific process, and guided exercises and assignments aimed at practicing primary literature reading and summarizing. Students are expected to complete all assigned reading in advance of the class meeting.

The second half of the course will focus on producing a document that will tell in layman's terms the story of a recent scientific study, from its inception to its publication, on a topic chosen by the student and approved by the instructor.

At the end of this course, students should have the necessary skills to:

- 1) Read, analyze, and interpret scientific data.
- 2) Give a compelling presentation of a scientific result or concept.
- 3) Communicate scientific facts to a non-specialist audience.
- 4) Find and evaluate scientific literature relevant to their interests and needs.

This course will fulfill the following [NJIT Institutional Learning Goals](#):

1. Research-based Inquiry: Students employ investigative methods
2. Collaboration: Students work effectively in teams to engage multidisciplinary perspectives
3. Engagement: Students are active and committed learners

It will also fulfill the following [Program Learning Goals in Biology](#):

1. Analyze and interpret in writing scientific information gathered through laboratory, field, and library research.
2. Speak effectively about scientific topics, issues, and problems in formal and informal contexts.
3. Interact with others in a skilled, cooperative fashion to discuss issues and solve problems.

Finally, this course will improve the following [NJIT Core Competencies of the Students](#):

1. Writing, Reading, and Critical Thinking
2. Information Literacy

Planned course outline:

Week 1	Introduction + assignment.
Week 2	- A primer on the scientific process. - How is a scientific idea born?.
Week 3	- How is biological research funded?. - Where does data come from?.
Week 4	- Data representation and analysis. - Academic publishing.
Week 5	- Science communication. - Project warm-up.
Week 6	- Conducting a scientific interview.
Week 7-14	Final project work + weekly project updates.
Week 15	Final project presentation.

The final project is due Monday, December 9. The final presentation will take place on Wednesday, December 11.

Office hours: by appointment.

Course prerequisites: Hum 102, R120:201/202, and BIOL 205/206.

Required texts: None.

Optional texts: "Reading Primary Literature: A practical guide to evaluating research articles in biology" by Christopher M. Gillen - ISBN-13: 978-08053-4599-5 ISBN-10: 0-8053-4599-X

Class website: Via NJIT Canvas.

Grading policy:

- Assignments will be graded PASS/FAIL. Project outputs will be graded on a point system.
- All grades for project outputs include active attendance and participation in the drafting, presenting, and feedback/peer-review process.
- I will add 5 points to your grand total if you send me an email before the first class to confirm that you have read this document.

Grading point breakdown:	
Assignments (8), all are pass/fail	10x8, 80 total
Project warm-up	45 points
Critique of project warm-up	25 points
Interview script	50 points
Final project	100 points
TOTAL	300 points

Grading Scale:	
A	88-100%
B+	81-87%
B	74-80%
C+	67-73%
C	60-66%
F	0-59%

Academic Integrity: Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working toward. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity policy that is found at: <http://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf>

Please note that it is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. Any student found violating the code by cheating, plagiarizing, or misusing any online software will result in disciplinary action. This may include a failing grade of F, and/or suspension or dismissal from the university. If you have any questions about the Code of Academic Integrity, please contact the Dean of Students Office at dos@njit.edu.