

Fall 2023

## **BIOL 630-001: Critical Thinking for Life Sciences**

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**BIOLOGY 630: CRITICAL THINKING FOR THE LIFE SCIENCES**

**NJIT: BIOL 630** (CRN 90304) ■ **RU: 48:120:630**

<b>INSTRUCTOR:</b>	Eric Fortune ( <a href="mailto:eric.fortune@njit.edu">eric.fortune@njit.edu</a> )		
<b>CLASS HOURS:</b>	MW 10:00 AM - 11:30 AM • CKB 316	<b>COURSE WEBSITE:</b>	<a href="http://canvas.njit.edu/">http://canvas.njit.edu/</a>

**OBJECTIVE:** This course is designed to prepare graduate students for academic life. This includes developing skills for 1) effective written and oral scientific communication, and 2) providing feedback via collaboration and criticism.

**CLASS PARTICIPATION:** Students are expected to attend every class meeting, participate in discussions, and provide feedback and constructive criticism. **Classes will be held in Central King Building (CKB) Room 316.**

**OUTLINE AND EXPECTATIONS:**

- The course has three sections: 1) Paper summaries, 2) Review Paper, 3) Proposal.
- Each section includes both a writing assignment and oral presentations in class.
- You are expected to provide feedback on both written and oral assignments to your colleagues.
- You will develop an annotated bibliography of relevant publications over the semester.

**REQUIRED TEXTBOOK:** None. Be sure to have access to Canvas ([canvas.njit.edu](http://canvas.njit.edu), login with UCID).

**PRESENTATIONS:**

There are three presentation categories that correspond to the three sections of the course:

1. Presentations of 2 individual scientific papers.
2. Presentation of a research topic as part of writing a Review paper.
3. Presentation of a research proposal.

**WRITTEN ASSIGNMENTS:**

There are three written assignments that correspond to the three sections of the course.

**Summaries:** You will write 2 summaries of original research papers that includes significance, main highlights of results, methodology (if relevant) and critical thoughts. These short papers, perhaps 2 to 3 pages in length, are due in class for review on **September 18** with final revisions due on **October 4**.

**Review paper:** You will write a Review paper on a topic of your choosing. However, the topic must be reviewed and approved by me. A discussion of your topic can take place at any time, but the formal deadline is **October 11**.

The draft version (due **October 16**) should consist of:

- Title and Author
- Summary (max 200 words)
- Introduction (Significance and Background)
- Body (Divided into sections)
- Conclusions (Review, relevance, new questions)
- References (PubMed)

The Review paper has maximum of 3,500 words (including all the above sections except references). I hope to have your papers evaluated for plagiarism using *Turnitin*. Your peers will read and edit your paper on **October 16**. The final version of the Review paper is due **November 8**.

**Proposal:** You will write a short (2000-2500 words) description of a grant proposal on a topic related to your Review paper. This proposal will include a Summary section (including Significance) and Specific Aims and/or Hypotheses sections. The first draft of the proposal is due on **November 20**. The final version of the proposal is due **during finals week (specific date to be determined in class)**.

**In class evaluations:** Students will provide formal written feedback of both oral and written work. The evaluations will be collected at the conclusion of each day of presentations and written feedback sessions.

#### GRADING POLICY

GRADE DISTRIBUTION			A	90-100
Participation	20%		B+	80-89
Presentations	25%		B	73-79
Evaluations	20%		C+	67-72
Review Paper	30%		C	60-66
Grant Proposal	15%		F	0-59
<b>TOTAL</b>	<b>110%</b>			

#### IMPORTANT RULES

- The [Academic Integrity Code](#) is strictly enforced.
- **Plagiarized assignments will receive an automatic zero grade; the student will receive an F in the course and will be reported to the Dean of Student Affairs.**
- There will be no make-up assignments.
- The grade of assignments/classes missed because of a valid excuse will be determined on a case-by-case basis.

## Course Schedule (EXPECT CHANGES!)

### Section 1: Paper summaries

6 • Sept	<b>Discussion:</b> Introduction to the course [Critical Thinking?]
11 • Sept	<b>Lecture:</b> Communication in Science, Selection of papers
13 • Sept	<b>Lecture:</b> Psychophysics of PowerPoint
18 • Sept	Written feedback session [Draft <u>Paper summaries</u> Due]
20 • Sept	Student presentations (1)
25 • Sept	Student presentations (1)
27 • Sept	Student presentations (1)
2 • Oct	<b>Lecture:</b> Structure of written scientific reports
4 • Oct	Student presentations (2) [Final <u>Paper summaries</u> Due]
9 • Oct	Student presentations (2)
11 • Oct	Student presentations (2)
	[Approval of <u>Review paper</u> Topic]

### Section 2: Review paper

16 • Oct	Written feedback session [Draft <u>Review paper</u> Due]
18 • Oct	Written feedback session [Draft <u>Bibliography</u> Due]
23 • Oct	<b>Preparing group presentations</b>
25 • Oct	<b>Group presentations</b>
30 • Oct	Student presentations of review papers
1 • Nov	Student presentations of review papers

- 6 • Nov Student presentations of review papers
- 8 • Nov **Lecture:** Developing and writing a research proposal  
[Final Review paper Due]

### Section 3: Research Proposal

- 13 • Nov **Lecture:** Proposal takedown
- 15 • Nov Elevator pitches of **Proposals**
- 20 • Nov Peer review of proposals [Draft Proposal Due]
- 22 • Nov No class • Thanksgiving Break
- 27 • Nov Final Presentations
- 29 • Nov Final Presentations
- 4 • Dec Final Presentations
- 6 • Dec Final Presentations
- 11 • Dec Peer review of proposals
- 13 • Dec **Discussion:** Course Review [Final Bibliography Due]

[Final Proposals due during finals week]