

COURSE INFO - Grading and Evaluation Criteria

BIOENG-451 Course Notes
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1 Course Evaluation and Grading Scheme

1.1 The aim and content of this course

The goal of this course is to learn to analyze a scientific paper critically, question if the data support the conclusions, and produce constructive referee reports in written or oral form. The papers considered will give an overview of the field of developmental neurobiology.

In this course, you will learn how to read a paper critically and analyze its content. We will examine published papers and discuss which conclusions can be justified and which require some wishful thinking. We will dissect papers in the field of 'Developmental Neurobiology', focusing in particular on a molecular and cellular perspective, discussing recent research, as well as classic landmarks. The subareas you will learn about include 'Patterning and Gene Regulation', 'Lineages and Tracing', 'Migration and Synaptogenesis', 'Single-cell analyses and computation', and 'Human development and in vitro models'.

1.2 General Principles

The evaluation system in **BIOENG-451** is designed to promote consistent engagement, critical thinking, and collaborative learning. Every student is responsible for reading the assigned papers in depth, contributing to discussions, and developing the skills required to critically evaluate scientific literature. While two students will serve as *presenters* for each paper, there is no distinction in preparation level between presenters and non-presenters—*all* participants are expected to arrive equally well-prepared.

1.3 My Advice: enjoy being a scholar

Literature analysis is at the heart of scholarly activity. Enjoy it. Approach every paper with curiosity and critical passion: read it actively (annotate, question methods, trace evidence to claims) and come prepared to discuss. Last year, all students did this earlier or later... so no one received below a 5.0. If you read deeply and contribute thoughtfully, strong scores follow naturally.

1.4 Advice from an anonymous colleague

"I can confidently say that I've learned so much: from acquiring essential skills like reading articles, extracting important info, analysing data and figures, to deepening my knowledge in neuro development, to gaining a sense of how research works and becoming critically minded, the list goes on... In retrospect, if I had known that the true aim of the course is really to gain such invaluable skills, I wouldn't have stressed as much and would have focused on enjoying the journal clubs as much as I can, as they were essentially just

intellectual conversations after all!”

—Former participant (anonymous survey - January 2024)

1.5 Overall Weighting

Final grades are determined according to three main components:

- **Peer Review (25%)** — a written, detailed critique of an assigned paper (approx. 3 pages).
- **Presentation (25%)** — evaluated only for the session where the student serves as presenter.
- **Journal Club Live + Forum (50%)** — ongoing participation score across all assigned papers.

The Journal Club (JC) component is itself split evenly:

- **Live Discussion:** 50% of the JC score.
- **Forum Contributions:** 50% of the JC score.

1.6 Example Score Table

Component	Weight	Example Grade	Notes
Peer Review	25%	5.5	Strong critique, clear structure, relevant insights.
Presentation	25%	5.0	Good summary, some figure explanations unclear.
JC Live	25%	5.25	Connects forum ideas in live discussion.
JC Forum	25%	5.75	High-quality evidence-based posts, peer engagement.
Final Grade		5.38	Weighted average.
Final Grade (nearest 0.25)		5.50	Approximated to nearest quarter.

1.7 Journal Club scoring - Common Criteria for All Participants

Every student is evaluated on:

1. **Preparation & Understanding** — demonstrates familiarity with the paper’s objectives, methods, and findings.
2. **Active Contribution** — provides at least two substantive contributions per session.
3. **Critical Thinking** — identifies both strengths and weaknesses with specificity.
4. **Responsiveness** — builds on others’ points and adapts to discussion flow.
5. **Clarity** — communicates clearly and concisely.

1.8 Additional Criteria for Presenters

In addition to the common criteria:

1. **Clarity and Structure** — concise and coherent summary.
2. **Selection of Content** — relevant figures/data chosen and explained.
3. **Time Management** — respects allotted time.
4. **Contextualization** — situates the paper in the broader literature.
5. **Audience Engagement** — stimulates discussion.

1.9 Detailed Rubric: Forum Participation

Scores for forum participation range from **3.0** (no participation) to **6.0** (exceptional contributions). The following scale applies:

- **3.0** → Does not participate in the forum at all.
- **3.25** → Makes a minimal presence in the forum (such as a greeting or acknowledgment) without substantive content related to the paper.
- **3.5** → Writes a sentence in the forum that shows basic awareness of the paper.
- **3.75** → Writes a brief comment that mentions the paper but lacks depth or meaningful engagement with its content.
- **4.0** → Writes a comment in the forum that shows engagement with the paper.
- **4.25** → Writes a substantive comment about the paper (as 4.0) and shows initial attempt at engagement with colleagues or poses a basic question.
- **4.5** → Writes a comment in the forum that shows engagement with the paper (as 4.0) and engages with colleagues (such as commenting on or responding to another student).
- **4.75** → Writes a comment with some depth about the paper (beyond 4.0) and responds to or builds on one colleague's point.
- **5.0** → Writes more than one point and at least one is of significant relevance. Engages with colleagues in ways that help resolve doubts or responds thoughtfully to analytical questions from the TA.
- **5.25** → As 5.0, plus demonstrates clear critical thinking about the methodology or findings and facilitates productive discussion through questions or synthesis of different viewpoints.
- **5.5** → As 5.0, plus contributes several well-developed points demonstrating strong analytical skills, with at least one point centering on evidence and its support for validity of claims, and consistently engages constructively with both colleagues and TA.
- **5.75** → As 5.0, plus provides insightful analysis with at least two points relating to evidence and validity of claims, initiates thought-provoking discussions, or makes connections to related course concepts or literature beyond the paper.
- **6.0** → Brings up more than two points with at least two centering on evidence and its support for validity of claims (as 5.75), and at least one is excellent/original/unique showing exceptional understanding and care for detail and analysis, or brings substantial literature perspective demonstrating knowledge well beyond the paper.

1.10 Detailed Rubric: JC Live Participation

Scores for live participation also range from **3.0** to **6.0**:

- **3.0** → Unexcused absence (only one absence may be excused).
- **4.0** → Present and attentive (camera on if online) but does not speak.
- **4.5** → Present and makes at least one substantive attempt to contribute (even if partially incorrect or unclear).

- **4.75** → Offers a brief comment showing basic understanding or referencing a critical point (from forum discussion or personally identified).
- **5.0** → Contributes meaningfully by advancing a critical point, helping resolve an open question, or raising a new, relevant issue.
- **5.25** → As 5.0, plus shows awareness of multiple distinct issues and explicitly connects, compares, or integrates points raised by others.
- **5.5** → As 5.0, plus demonstrates solid grasp of key methodological or interpretive issues and either synthesizes viewpoints or substantially advances the debate with well-framed critique.
- **5.75** → As 5.0, plus provides particularly insightful, evidence-aware analysis of key issues and actively facilitates others' participation (e.g., inviting or framing follow-up).
- **6.0** → Delivers multiple high-quality contributions integrating evidence, linking to broader literature or concepts, introducing at least one original high-impact insight, and constructively guiding discussion while encouraging peers.