**Research Proposal, Presentation and Final paper Grading rubric**
**BIOL 4110**

The most important features we are seeking are: critical analysis; evidence that the work was conducted fully and completely; clarity of expression, attention to detail including grammar; meeting the requirements of hypotheses, literature reviewed, methods; and a projected workplan of what gets done when.

We will evaluate all work at three levels: basic expectation (grade 60-70), novelty and scope (70-80), and critical thinking (80-100). That is to say, if you do the minimum without demonstrating an assessment of novelty of your research question including a connection of your work to the literature, and without critical assessment of the topic (i.e. alternative hypotheses), then your mark will likely fall within the 60-70 range.

Grade of 60-70: Your question, why it's interesting or important, hypotheses, predictions, and methods

■ Title: The title describes the subject matter of the article
■ Group members (alphabetically by last name, with student numbers) + Group number
■ Introduction:
    Question (Novelty)
    Hypotheses (Causal mechanisms, competing mechanisms? If …)
    Prediction(s) (then …)
■ Methods
    clearly connected to hypotheses/predictions
    description of the dataset you have or hope to obtain
    replication unit, #,
    stats
    Anticipated results (final figure(s)) and impact
■ Consistent reference format and reference list included with sufficient references to explain proposal
■ Presentation has no language and/or grammatical errors (5-mins, 2 mins for questions). There's a penalty for talks that go over time.
■ Proposal Maximum is 3 pages of written text (Times New Roman, double spaced, 12 point font), including figures, but not including tables, references, etc. (meaning you can add extra pages).
■ Figures (and tables)
    Link to the text is clear, explicit, and useful
    If you present your data, designs, or ideas in a table or graph, include a title describing what is in the table/graph ("Enzyme activity at various temperatures", not "My results".)
    For graphs, you should also label the x and y axes.

Grade of 70-80: Novelty and connection to the literature

■ Development of the broader ecological context for the research.
■ A compelling description of work done by others relating to the hypothesis.
■ A brief but thorough and critical interpretation and analysis of prior work.
■ A clear linkage of evidence to main ideas and logical development of ideas is demonstrated. Justifications for proposed research are convincing and compelling.
■ Specific methods are well described with advantages & disadvantages considered, and justification for choices is compelling.

Grade of 80-100: critical analysis including competing hypotheses

■ Two or more competing or complementary mechanistic hypotheses and corresponding predictions that are logically and elegantly developed – what are you testing?
■ Potential outcomes and inferences are described and broader significance – the bigger picture
■ Implications and novelty of research stated in a compelling way – global significance.

| Item for evaluation | Maximum Score /70 |
|---|---|
| Identifiable and clear main question | /15 |
| Problem statement – the ecological uncertainties in the field, why the research matters or is important | /15 |
| Hypothesis – basic identification of what's being tested, with predictions (prediction – If the hypothesis is true, then we would expect to see the following…] | /10 |
| Methods: clear connection to the hypotheses, with the design being used sufficient to test the question | /10 |
| Methods: replication, design and layout, equipment, stats? | /5 |
| Methods: feasibility | /5 |
| Anticipated Results and timeline – what will happen and when | /10 |
| **Good – Novelty and connection to the literature** | Maximum Score /10 |
| Development of the broader ecological context for the research | /5 |
| A brief but thorough and critical interpretation and analysis of prior work in the literature. | /5 |
| **Excellent – Critical Analysis including competing hypotheses** | Maximum score /20 |
| Two or more competing or complementary mechanistic hypotheses and corresponding predictions were logically and elegantly developed. | /10 |
| Potential outcomes and inferences are described and broader significance and implications of research stated in a compelling way. | /10 |