
This form should be read at the beginning of the semester by both the student and his or her research mentor.

Expectations of the Research Student
To make the experience worthwhile for both the student and the research mentor, we expect the student to commit a sizable amount of time to the Research course. The Research course is not, and should not, be “an easy A” course. On average, the student should expect to spend between 3 to 5 hours a week per credit in the lab during the Fall or Spring semesters. Thus, for a typical three-credit course, students would be expected to work 12-15 hours per week. During this period, the student will be expected to be in the lab conducting experiments, organizing their data, reading about their research project, attending lab functions and meetings, and completing reports and their research paper.

End of Semester Paper
A written research paper in the format of a scientific paper is required at the end of each semester. The research paper should include an Introduction, Materials and Methods, Results (data should be presented in figure and/or tabular form), Discussion, and References. In general, we require a minimum of 10 pages for a one, two or three credit course (double spaced, no larger than 12 pt. font). When registering for more than three credits, students are expected to write an additional 3 pages per credit above the minimum 10-page paper. Please consider these page guidelines as rock-bottom minimums. The student’s report needs to be long enough to get the job done and to satisfy research mentor’s expectations.

Students should submit a draft of their paper to their research mentor well in advance of the due date, so that he or she can make corrections and give suggestions. The report for subsequent semesters does not need to be completely different from the first semester report if the student is continuing the project (i.e., much of the Introduction and Methods sections can simply be updated).

The paper is a major part of the grade and must be written in the student’s own words. The student should avoid extensive quotes and paraphrases. Papers that are not original may be rejected (see below). All papers will be checked with TURNITIN.

The student must upload an electronic copy of the paper to the SAKAI (https://sakai.rutgers.edu/portal/) site for Research in Genetics for that particular semester. Papers may be submitted in either .doc, .pdf, or plain text (.txt) formats. The Submission Title for your paper should be the student’s name, the course number, and RUID. For example, Gregor Mendel 406 RUID 301001121. Do not use titles such as “Research Report.” We will download the final paper from the email for our archives, and we need each paper to be easily identifiable.

The research paper is due for SAKAI upload by the first day of final exams by 11:30 AM. If a grade is not received by this time, the student will receive a grade of NG on their transcript. It is the responsibility of the student to know the due date.

Grading
Students will be graded by their research mentor based on the following rubrics. Students and research mentors should familiarize themselves with the rubrics so as to understand course expectations. Faculty mentors should complete this form and email it to the Genetics Department Vice Chair at heiman@dls.rutgers.edu by the first day of final exams.
MENTOR EVALUATION

Student:  
Research Mentor:  
Semester and Year:  

Please rank the student in the appropriate box for each rubric (A-G). Please use the rubric descriptions that follow to guide your evaluation.

<table>
<thead>
<tr>
<th>Rubrics</th>
<th>Ranking (Lowest to Highest)</th>
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<td>A. Field Knowledge</td>
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<td>B. Statement and Justification of Hypothesis</td>
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<td>C. Technical Ability</td>
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<td>D. Analysis, Presentation, &amp; Interpretation</td>
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<td>E. Conclusions, Implications, &amp; Future Directions</td>
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<td>F. Effective Oral Communication</td>
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<td>G. Effective Written Communication</td>
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Suggested Grade For Course:

Guidelines For Student Assessment Using Rubrics

A. Field Knowledge – Factual and Conceptual
- **Outstanding**: Background information is completely accurate and has the appropriate level of specificity to provide useful context to aid the audience’s understanding; primary literature references are relevant, adequately explained and indicate a reasonable literature search.
- **Good**: Background information has the appropriate level of specificity to provide relevant context; primary literature references, while few, are relevant and adequately explained. Background information may contain minor omissions/inaccuracies, but these do not detract from the major point of the presentation.
- **Satisfactory**: Background omits information or contains inaccuracies which detract from the major point of the presentation; background information is overly narrow/general and only partially relevant; primary literature references, if present, are inadequately explained.
- **Unsatisfactory**: Background information is missing or contains major inaccuracies; background information is accurate, but irrelevant or too disjointed to make relevance clear; primary literature references are absent or irrelevant, many containing website or secondary references.

B. Statement And Justification Of Hypothesis
- **Outstanding**: Clear statement of hypothesis with clear justification in context of the field.
- **Good**: Clear statement of hypothesis with some degree of justification.
- **Satisfactory**: Clear statement of hypothesis without clear justification.
- **Unsatisfactory**: No clear statement of hypothesis.

C. Technical Ability
- **Outstanding**: Skillfully employs technologies to access information, research an issue, test a hypothesis, and communicate findings. Makes effective and efficient choices. Demonstrates a sophisticated understanding of the strengths and limitations of a particular technology (or methodology the technology allows).
- **Good**: Efficiently employs appropriate technologies to access information, research an issue, test a hypothesis, and communicate findings. Identifies the strengths and limitations of a particular technology (or methodology the technology allows).
• **Satisfactory**: Satisfactorily employs appropriate technologies to access information, research an issue, test a hypothesis, and communicate findings as directed by the course. Satisfactorily recounts the strengths and limitations of a particular technology (or methodology the technology allows).

• **Unsatisfactory**: Does not employ appropriate technologies to access information, research an issue, test a hypothesis, and communicate findings. Cannot identify the strengths and limitations of a particular technology (or methodology the technology allows).

### D. Analysis, Presentation And Interpretation Of Data

- **Outstanding**: Clear and effective analysis and presentation of data. Accurate interpretation of data and recognizing its limitations. When assessing statistical and scientific research, the student applies standards of reproducibility, falsifiability, and generalizability.

- **Good**: Clear analysis and presentation of data.

- **Satisfactory**: Presentation of data with little to no analysis and interpretation.

- **Unsatisfactory**: Poor presentation of data and no analysis and interpretation.

### E. Drawing Appropriate Conclusions And Identifying Implications And Future Directions

- **Outstanding**: Draws accurate and relevant conclusions from data; makes appropriate connections between hypothesis, data and conclusions; conclusions address and logically refute or explain lack of conflicting data; insightful or sophisticated identification of implications and future directions.

- **Good**: Draws accurate conclusions from data; reasonable and clear chain of logic from hypothesis to data to conclusions is made; conclusions attempt to discuss or explain conflicting/missing data; offers appropriate implications based on the conclusions and offers appropriate directions for future work.

- **Satisfactory**: Attempts to draw conclusions, but they are inaccurate; connections between hypothesis, data and conclusions are present but weak; conflicting/missing data are poorly addressed; offers implications and future directions that are not very relevant to the project.

- **Unsatisfactory**: Makes no attempt to draw conclusions or make appropriate implications.

### F. Effective Communication – Oral

- **Outstanding**: Effective audience engagement (e.g., eye contact), supporting audience involvement; effective variations in rate/volume/tone/voice inflection for audience/purpose; fluent delivery and effective response to all questions asked.

- **Good**: Fluent delivery and appropriate response to most questions asked. Engagement with audience is not consistent or not with the entire audience; effective rate/volume; appropriate tone/voice inflection for audience/purpose.

- **Satisfactory**: Minimal audience engagement; some reading of content; some rate/volume inadequacies; little variation in tone/voice inflection; somewhat halting delivery with frequent space fillers (e.g. "um," "like," etc.); unable to completely answer most questions.

- **Unsatisfactory**: Little or no audience engagement; reads content; speaks too fast/too slow; speaks too loud/too soft; speaks with monotone/highly erratic voice inflection; halts delivery with frequent distracting fillers; unable to answer any questions.

### G. Effective Communication – Written

- **Outstanding**: The document can be easily followed. A combination of the following are apparent: effective transitions are used throughout, a professional format is used, and the graphics/figures are descriptive and clearly support the document’s purpose; the document is clear and concise and appropriate grammar is used throughout.

- **Good**: The document can be easily followed. A combination of the following are apparent: basic transitions are used, a structured format is used, and some supporting graphics are provided but not clearly explained; the document contains minimal distractions in thought, graphical presentations, and grammar/mechanics.

- **Satisfactory**: Organization of the document is difficult to follow due to a combination of inadequate transitions, rambling format, insufficient or irrelevant information, and ambiguous graphics/figures. The document contains numerous distractions that appear in the form of flow in thought, graphical presentations, and grammar/mechanics.

- **Unsatisfactory**: There appears to be no organization of the document's contents; sentences are difficult to read and understand.
Because a brand new student in your lab or group might not achieve “outstanding” in all of the rubrics above (but still be doing “A” grade work when calibrated for his or her inexperience), we provide here two grading rubrics: one for new students and one for seasoned veterans.

**Grade For Course** (use this rubric for a new student in your lab or group)

- **A** The student has surpassed the expectations of the course and demonstrated a combination of “outstanding” and “good” achievement evaluations in the rubrics.
- **B+** The student has achieved the learning goals of the course and demonstrated “good” achievement evaluations in most or all rubrics.
- **B** The student has achieved the learning goals of the course and demonstrated a combination of “good” and “satisfactory” achievement evaluations in the rubrics.
- **C+** The student has achieved some but not all of the learning goals of the course and demonstrated “satisfactory” achievement evaluations in most or all rubrics.
- **C** The student has achieved some but not all of the learning goals of the course and demonstrated a combination of “satisfactory” and “unsatisfactory” achievement evaluations in most or all rubrics.
- **D** The student barely achieved any of the learning goals of the course and demonstrated a combination of “satisfactory” and “unsatisfactory” achievement evaluations in most or all rubrics.
- **F** The student did not achieve any of the learning goals and demonstrated “unsatisfactory” achievement evaluations in most or all rubrics.

**Grade For Course** (use this rubric for a seasoned student who has been in your lab or group for at least one semester prior to this one)

- **A** The student has surpassed the expectations of the course and demonstrated “outstanding” achievement evaluations in most or all rubrics.
- **B+** The student has surpassed the expectations of the course and demonstrated a combination of “outstanding” and “good” achievement evaluations in the rubrics.
- **B** The student has achieved the learning goals of the course and demonstrated “good” achievement evaluations in most or all rubrics.
- **C+** The student has achieved some but not all of the learning goals of the course and demonstrated a combination of “good” and “satisfactory” achievement evaluations in the rubrics.
- **C** The student has achieved some but not all of the learning goals of the course and demonstrated “satisfactory” achievement evaluations in most or all rubrics.
- **D** The student barely achieved any of the learning goals of the course and demonstrated a combination of “satisfactory” and “unsatisfactory” achievement evaluations in the rubrics.
- **F** The student did not achieve any of the learning goals and demonstrated “unsatisfactory” achievement evaluations in most or all rubrics.