Dear Research Mentor,

Thank you for allowing our student into your lab and taking the time to mentor them. The experience conducting independent scholarship is invaluable for their future career. For this reason, to graduate with a major in Genetics, students are required to conduct independent scholarship, over at least two semesters. During these semesters, the student registers for research credits and are graded on their work. Therefore, at the end of the semester, we require your evaluation of their effort in your lab. We understand that you are busy and want to make the final evaluation as easy and quick as possible.

On page 2 of this document, I am providing you the expectations for the student. Knowing the student expectations at the beginning of the semester will help with your evaluation at the end. I encourage you to discuss these expectations with the student in the beginning of the semester so that there are no misunderstandings.

MENTOR'S EVALUATION: Two weeks before the last day of classes, the department coordinator, Amy Meerovich, will send you an email containing a link to the Mentor's Evaluation Rubric (using the Qualtrics survey system). This survey rubric (see below table) is your evaluation of the student's work while in the lab and for the semester research paper. To help with your evaluation of the rubric and grade, I have provided some guidelines on how to evaluate the student on the subsequent pages (pages 3-5). We will also include this information in the Qualtrics survey. Because the evaluation is part of the student's semester grade, we need your evaluation by the last day of class. The student can provide you with that date.

Thank you again and best wishes,

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RESEARCH MENTOR'S EVALUATION RUBRIC

Rubrics	**Ranking (Lowest to Highest)**			
	Unsatisfactory	Satisfactory	Good	Outstanding
A. Field Knowledge	☐	☐	☐	☐
B. Statement and Justification of Hypothesis	☐	☐	☐	☐
C. Technical Ability	☐	☐	☐	☐
D. Analysis, Presentation, & Interpretation	☐	☐	☐	☐
E. Conclusions, Implications, & Future Directions	☐	☐	☐	☐
F. Effective Oral Communication	☐	☐	☐	☐
G. Effective Written Communication	☐	☐	☐	☐

Student semester grade for time in your lab and the semester paper: _____

Grading for the course:

A (90-100), B+ (87-89), B (80-86), C+ (77-79), C (70-76), D+ (67-69), D (60-66), F (0-59)

Percent of grade	**Description**
85%	**Research mentor's grade (end of the semester)**
15%	**Completing other course requirements (detailed in next 4 rows)**
• 7%	• Detailed Proposal Form
• 2%	• SURVEY: Current Independent Scholarship project & mentor information
• 2%	• SURVEY: Additional research/independent scholarship credits
• 4%	• Submitting Semester Research Paper

Please see following pages for expectations for student and the guidelines for evaluation rubrics and grade.

Student Expectations and Mentor Evaluation Guidelines for 01:447:406 SUMMER *Research in Genetics*

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

EXPECTATIONS OF THE RESEARCH STUDENT (SUMMER)

A student may register for 3 credits for the **entire summer** [typically from the end of May to the middle of August –check the summers session dates calendar for specific dates]. Students may not travel or study abroad during this period. 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 (particularly during the compressed timeline of the summer session). The Research course is not, and should not, be "an easy A" course (many students do not get an "A"). On average, the student should expect to spend a minimum of **5 to 7 hours a week** *per credit* in the lab during the summer session. Thus, for a typical three-credit course, students would be expected to work a minimum of **15-21 hours per week**. During this period, the student is expected to be in the lab conducting experiments, organizing their data, reading background literature, attending lab functions and meetings, and completing reports. In addition, the student is expected to complete the **Semester Research Paper**, graded by the research mentor. The maximum number of credits over the entire summer is three.

SEMESTER RESEARCH PAPER

At the end of each semester of research, the student is required to write a research paper, the **Semester Research Paper**, which in the format of a scientific paper. This research paper should include an Introduction, Materials and Methods, Results (data should be presented in figure and/or tabular form), Discussion, and References. However, it is quite possible that the student will not have any results in the first semester so, in that case, the research paper may only include an introduction and methods. Additionally, due to page limitations of a particular research field, some research mentors may want to restrict the number of pages of the final overall paper (the one at the end of the project) that is fewer than the SUGGESTED number (see below).

Therefore, the **ACTUAL** minimum page limits for the Semester Research Paper for a particular student is at the discretion of the research mentor and should comply with the convention of their research field. At the end of each semester, the Semester Research Paper must be long enough to get the job done based on status of their project and to satisfy research mentor's expectations.

To help provide some guidance for the research mentor and student, the departmental SUGGESTED minimum page limits are outlined below. At the beginning of the semester, the research mentor can use these guidelines in their discussion with the student about the expectations for the project.

SUGGESTED DEPARTMENTAL MINIMUM PAGE LIMITS (using double spaced, no larger than 12 pt. font)

Introduction: 3 pages minimum
Methods: 2 pages minimum
Results: 2.5 pages minimum
Discussion: 2.5 pages minimum

SUBSEQUENT SEMESTERS: The Semester Research Paper for subsequent semesters does not need to be completely different from the first semester paper if the student is continuing the project (i.e., much of the Introduction and Methods sections can simply be updated). However, as the student continues the project in subsequent semesters, we would expect they would include more data and sections (e.g., results and discussion). In that case, the expectation would be more pages. This continues even if the student remains in the same lab for more than two semesters (e.g., more results or switching to an honors thesis). Again, the **ACTUAL** minimum page limit is up to the research mentor's discretion.

The student should submit draft sections to the research mentor well in advance of the due date (e.g., 2 weeks), so that the mentor can review and provide comments, corrections, and edits. The Semester Research Paper is a major part of the grade for this course, **graded by the research mentor**, and must be written in the student's own words. Thus, the student should avoid extensive quotes and paraphrases.

Mentor's Evaluation Rubric and Grade

A major part of the student's course grade is based on **research mentor's evaluation**. Two weeks before the last day of classes, the department coordinator, Amy Meerovich, will send the mentor an email containing a link to the Mentor's Evaluation Rubric. This rubric includes the research mentor's grade for the student's time in the lab. Since the mentor's evaluation is part of the semester course grade, we need the evaluation by last day of classes. The student is responsible to alert your research mentor of this deadline. **IMPORTANT**: **If your research mentor does not complete the Qualtrics rubric by the time grades are due at the registrar, the student will receive a "TZ" grade for the course.**

Mentor's Evaluation Guidelines for Rubric

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.

SEMESTER GRADING NOTE: 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" students.

Suggested 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 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.

Suggested 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 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.