

## **Rubrics**

Undergraduate Research in Biology (BIOL 3018)

Robert J. Mayer Ph.D.

Department of Natural Sciences  
University of Puerto Rico at Aguadilla

Rev 1/09

## I. Scientific proposal (100 points)

Scientific proposals, or any other work, not turned in on time will not be accepted under any circumstances.

Original submission of proposal **will be graded** and turned in with corrections and suggestions.

The scientific proposal should be done **individually**. Every student must turn in an original proposal based on the group work.

Students are expected to incorporate corrections and turn in a second draft in order to promote the learning process.

1. Turned in on or before due date (10 points). \_\_\_\_\_
2. Title page and text in written format discussed in class (10 points). \_\_\_\_\_
3. Appropriate title (brief, concise but descriptive) (10 points). \_\_\_\_\_
4. Introduction and background (puts work into perspective of a bigger picture and ends talking about current project) (15 points). \_\_\_\_\_
5. Question (realistic, appropriate for course time frame) (10 points). \_\_\_\_\_
6. Why this question? (gives valid reason to perform work) (10 points). \_\_\_\_\_
7. Experimental logic (states null hypothesis and at least one alternative hypothesis) (10 points).  
\_\_\_\_\_
8. Methods and materials
  - a. explains clearly (in narrative form) the procedures and equipment that will be used in research project (5 points) \_\_\_\_\_
  - b. describes experimental design including sampling procedures (5 points) \_\_\_\_\_
  - c. easy to understand and replicate (5 points) \_\_\_\_\_
9. Proposed statistical treatment
  - a. states appropriate sample size (5 points) \_\_\_\_\_
  - b. states appropriate statistical test (5 points) \_\_\_\_\_

## II. Scientific paper (100 points)

Original submission of paper **will be graded** and turned in with corrections and suggestions.

**Every research group should turn in one scientific paper representing the work of the whole group.**

Students must choose an appropriate scientific journal and must follow “instructions to authors” for that particular journal. Group has to turn in a printed copy of the instructions to authors used to write manuscript.

1. Turned in on time (10 points) \_\_\_\_\_.
2. Title page and text written in correct format (10 points) \_\_\_\_\_.
3. Abstract (gives some background and talks about research question and ways in which it will be examined. Should also summarize results and puts them in context of a big picture). (10 points) \_\_\_\_\_.
4. Introduction (20 points) (Gives appropriate background and ends in a brief description of current work. Goes from very general to specific) \_\_\_\_\_.
5. Materials and methods
  - a. explains clearly (in narrative form) the procedures and equipment that will be used in research project (5 points) \_\_\_\_\_.
  - b. describes experimental design including sampling procedures (10 points) \_\_\_\_\_.
  - c. easy to understand and replicate (5 points) \_\_\_\_\_.
6. Results
  - a. Clear narrative with no excessive data and including only crucial results (5 points) \_\_\_\_\_.
  - b. Clear graphs and tables with captions and figure or table numbers (3 points) \_\_\_\_\_.
  - c. Statistical results included (5 points) \_\_\_\_\_.
  - d. Includes no discussion of results (2 points) \_\_\_\_\_.

7. Discussion

- a. Makes a good conclusion of results (5 points) \_\_\_\_\_
- b. Puts the results in the context of what is known in the field (5 points) \_\_\_\_\_.
- c. Mentions future direction of research (5 points) \_\_\_\_\_.

III. Final oral presentation (100 points)

**Students should follow Michael Alley’s method of “Assertion Evidence” in crafting their presentation. Each student needs to present in order to receive credit. The presentation must be 25 ± 2 minutes long.**

**Presentation Critique**

1. Structure:

**A. Beginning**

- Scope ? (5 points) \_\_\_\_\_
- Importance? (5 points) \_\_\_\_\_
- Background? (5 points) \_\_\_\_\_
- Mapping? (5 points) \_\_\_\_\_

**B. Middle**

- Logical ? (5 points) \_\_\_\_\_
- Methodical ? (5 points) \_\_\_\_\_

2. Presentation Slides

- Readable type ? (2 points) \_\_\_\_\_
- Sentence headlines ? (2 points) \_\_\_\_\_
- Proper level of detail ? (8 points) \_\_\_\_\_

**C. Transitions**

- Beginning – middle ? (5 points) \_\_\_\_\_
- Between middle divisions ? (5 points) \_\_\_\_\_
- Middle – ending ? (5 points) \_\_\_\_\_

**D. Conclusion**

- Summary ? (5 points) \_\_\_\_\_
- Closure ? (5 points) \_\_\_\_\_

- Key results ? (2 points) \_\_\_\_\_
- Key images ? (2 points) \_\_\_\_\_

### 3. Comments on specific slides:

Title Slide                  Mapping Slide                  Body Slides                  Conclusion Slide

Enough time spent on ?

Sentence headline ?

Sentence headlines ?

Sentence headline (“In summary”) ?

### 4. Delivery

Energy ? (2 points) \_\_\_\_\_

Handling of time ? (6 points) \_\_\_\_\_

Confidence ? (2 points) \_\_\_\_\_

Handling of equipment ? (2 points) \_\_\_\_\_

Eye contact ? (5 points) \_\_\_\_\_

Handling of questions ? (4 points) \_\_\_\_\_

Dependence on notes ? (2 points) \_\_\_\_\_

Talking too fast (time management) ? (2 points) \_\_\_\_\_

Filler phrases (“uh”) ? (2 points) \_\_\_\_\_

Distracting movements ? (2 points) \_\_\_\_\_

## 5. Overall Comments

### IV. Presentation and discussion of assigned book chapters (100 points)

**Students that fail to present their assigned chapter will receive a 0/100 grade. NO EXCUSES!**

- a. Timing (15 minutes max) (15 points) \_\_\_\_\_.
- b. Avoidance of paraphrasing (10 points) \_\_\_\_\_.
- c. Capacity to summarize content (15 points) \_\_\_\_\_.
- d. Avoidance of the use of notes (10 points) \_\_\_\_\_.
- e. Clarity of discussion (10 points) \_\_\_\_\_.
- f. Eye contact (10 points) \_\_\_\_\_.
- g. Appropriate tone of voice (10 points) \_\_\_\_\_.
- h. Coverage of topics (20 points) \_\_\_\_\_.

### V. Field trips (100 points)

- a. Shows up on time (15 points) \_\_\_\_\_.
- b. Pays attention during explanation of procedures (10 points) \_\_\_\_\_.
- c. Comes prepared for activities (20 points) \_\_\_\_\_.
- d. Participates actively on day's activities (55 points) \_\_\_\_\_.

### VI. Attendance (100 points)

The attendance grade is calculated using the following formula:

$$G = (100/N) * AB$$

**G = Attendance grade**

**N = Number of meetings**

**AB = Unexcused absences**

**VII. Scientific poster (100 points)**

- a. Appropriate font style and letter size in all sections (10 points) \_\_\_\_\_.
- b. Appropriate title heading including authors and affiliations (10 points) \_\_\_\_\_.
- c. Good background contrast with letters (15 points) \_\_\_\_\_.
- d. Introduction (10 points) \_\_\_\_\_.
- e. Materials and methods (10 points) \_\_\_\_\_.
- f. Results and discussion (10 points) \_\_\_\_\_.
- g. Conclusion (10 points) \_\_\_\_\_.
- h. General composition (15 points) \_\_\_\_\_.
- i. References (10 points) \_\_\_\_\_.