

# **PHYSICI 198A/B/C and 199 Research Paper Guidelines**

## **Directed Research or Departmental Honors Research**

**Your paper should follow the standard format for scientific papers that is described below.** Double space all text, use 12 pt font of Times New Roman or similar style, and place the page number at the bottom of each page.

Please submit your paper with your faculty mentor's signature on the front page by Friday of finals week at 11:59pm here: <https://sa.ucla.edu/forms/p/XdwFI>.

### **Page 1: Title page.**

Include the following information: The title of the paper, your full name and UID number, your graduate student or Postdoctoral mentor if applicable, your faculty mentor's name and department, and the date.

### **Page 2: Abstract.**

The abstract should include a brief introduction, the question of the hypothesis tested, the approach used, the main results, and the conclusions. In other words, the abstract is a brief summary of all aspects of your research project. It should be 250 to 300 words long.

**Page 3: Text of paper begins and includes four parts:** Introduction, Materials and Methods, Results, and Discussion. Please use these section titles in your paper.

### **INTRODUCTION:**

The Introduction should provide enough background information on your topic that a scientifically literate reader could understand and appreciate the experiments you have performed. It should include references and common abbreviations that will be used throughout your document. **The last paragraph of the introduction should explain the question that you address in your research.**

### **MATERIALS AND METHODS:**

The methods should be described in sufficient detail that they can be replicated by an experienced scientist. If several different methods were used, you can report them in separate sections with the appropriate subtitles. Include information on the experimental protocols used, the sources of unique reagents (such as antibodies), names of the constructs you used or created, and references to published methods that you employed. You do NOT need to include every step or detail of common methods. But when in doubt, include the method.

### **RESULTS:**

This section should describe the rationale for each experiment, the results obtained, and the conclusions derived from each set of experiments. Be sure that each paragraph begins with a topic sentence that introduces the contents of the paragraph. Results should be organized into figures and tables with descriptive legends (see below). Be sure to reference all figures and tables in the results section of the text. For example, as shown in Figure 3A, or (Fig. 3A). It is a good idea to lead your reader through the thought processes that led you from one experiment to the next. You do not need to report your data in the

chronological order you conducted your experiments. Instead, use the order that best “tells the story” of the research outcome.

### **FIGURES AND TABLES:**

**All figures and tables must have a title and an accompanying legend.** Prepare professional quality figures. Each figure or table should be on a separate page and placed after the bibliography. Be sure there is a page number and title on each figure or table. Legends should briefly tell the reader important information about the data: the method used, any abbreviations on the figure, and the main conclusion. If all legends are short, print them on the page with the figure. If your legends do not fit on the same page as the figure, place all of the legends, in numerical order, after the bibliography. In this case, your figures will follow the legends. Commonly, we use this format for submitting papers to journals.

### **DISCUSSION:**

**The first paragraph:** This is where you summarize your main findings and conclusions. What is the significance of your results?

**The body of the discussion:** This section should relate any conclusions derived from your results to the current understanding of the scientific problems in your field. Be sure to include references to other papers here. You can present a current model or include a summary figure in the discussion.

**Future directions:** The last paragraph is where you state what you plan to do for the next set of experiments, or if you are graduating, what you would do next if you were to continue to work on the project.

### **BIBLIOGRAPHY:**

You need to use a minimum of five original research papers and one review paper. Use the following format for your references and list them in alphabetical order by the **first author’s last name**.

Bareyre, FM, Kerschensteiner, M, Raineteau, O, Mettenleiter, TC, Weinmann, O, and Schwab, ME (2004) The injured spinal cord spontaneously forms a new intraspinal circuit in adult rats. *Nature Neuroscience* 7:269-277.

**Each reference must be cited in the text.** Use the following format for the citation depending upon the number of authors. If there are more than 8 authors, you may use *et al.* for the remainder.

Single author (Jones, 2009)

Two authors (Jones and Lee, 2008)

More than two authors as in the paper above (Bareyre *et al.*, 2004)