UNDERGRADUATE HONORS IN BIOPHYSICS

Guidelines for preparing the Honors Research Paper

The honors paper must describe independent research carried out by student as part of biophysics research requirement (250.531/521/522/597). Library research is not acceptable for this purpose. The length should be ~20 pages double-spaced, plus figures and literature citations. The format should follow the layout of a research paper; a guide for each section is given below:

Abstract (250 words, no longer)

A typical abstract typically contains one sentence describing the problem, one sentence describing its significance, one sentence describing the approach, and two-three sentences stating the results and conclusions.

Introduction (~4-6 pages)

Provide background information necessary to understand the study undertaken. Be sure to state why the problem you addressed is important as well as how your research relates to previous work. Assume that your reader is another undergraduate biophysics major with some scientific training but who does not work in the same lab. Your goal is to provide sufficient information for such a reader to understand and appreciate your project, but nothing extraneous.

Materials and Methods (~2-3 pages)

Describe your experimental protocols, and state where you obtained reagents. There should be enough detail to allow an independent researcher to reproduce your experiments. Since the methods section describes the experiments you have already done, it should be written in the past tense.

Results (~4-10 pages)

Provide a narrative that describes the outcome of the experiments performed. Figures documenting the results should be accompanied by legends that enable the reader to understand what is in the figure. It is preferable if the figures are imbedded in the text, but they can also be placed together at the end of the paper. The space taken by figures is not counted in the page limitation of the paper. The results section should be written in the past tense.

Discussion (~4 pages)

Discuss what was learned, the reliability of the results, any limitations to the interpretation, significance of your conclusions, future directions.

Literature references

These must follow the format of a standard journal in the field, such as *Biophysical Journal*, *Protein Science*, *Nature Structural Biology*, *Nucleic Acids Research*, etc. Take care to include references to the primary literature, not just review articles or textbooks. Your paper should represent a scholarly effort. In general, any time you report a specific scientific finding or restate a specific idea or thesis, the author of the experiments or the idea should be cited. The citation of a timely review article can support general statements that refer to a collection of phenomena. Your research advisor can direct you to the best literature sources in the area of your research project. The citations should be placed in a list at the end of the paper (endnotes rather than footnotes). Citations can either be numbered in order of appeared in the main text, or marked by Author, year in the main text and listed alphabetically in the reference section.

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Paper Deadline is March 01

Students who have met the requirements for the Biophysics major and who satisfy the following requirements are eligible for departmental honors at graduation:

• Overall GPA 3.5 or better

• "Honors Paper" in Biophysics approved in writing by the student's *Research Supervisor* and *Faculty Sponsor* and conforming to the attached guidelines.

To evaluate if you are eligible:

1. Determine your overall GPA and complete the Honors Clearance Form (available on the Academic Advising website). You do not need to complete the GPA Worksheet.
2. Consult with your research advisor about writing a paper describing your research project.

Timeline for fulfilling the Biophysics Honors Requirements:

1. Write your honors paper using the guidelines on the back of this sheet. Turn this paper into your *Research Supervisor* for comments and/or approval by March 1. **Give your *Research Supervisor* at least one week to read the paper and provide feedback to you.**
2. Once your *Research Supervisor* has approved your honors paper, give a copy to your *Faculty Sponsor* for comments and/or approval. Your faculty sponsor should receive the paper no later than March 20. (Sometimes the Research Supervisor and the Faculty Sponsor are the same person.) **Give your *Faculty Sponsor* at least one week to read the paper and provide feedback.**
3. Ask both your *Research Supervisor* and your *Faculty Sponsor* to send a note to Karen Fleming in writing indicating their approval of the paper. It is fine to have them send me a simple email sent directly to me (Karen Fleming) stating, "I approve the honors paper written by xx student entitled "Your fabulous title."".
4. Complete the Honors Clearance Form (available on the Academic Advising website). You do not need to complete the GPA Worksheet.
5. Bring the Honors Clearance Form and a copy of your Honors paper to me, Karen Fleming, Biophysics DUS. I sign the Honors Clearance form and keep the paper.
6. Bring the signed Honors Clearance Form over to Academic Advising before the deadline.

For Honors Designations in the May graduation program, all six of these steps must be completed no later than April 1.

This means that you will want to turn your honors paper into your *Research Supervisor* no later than March 1. The end of February should be your goal. The latest time to set up an appointment with your *Research Supervisor* to discuss the honors paper should be early February.