Senior thesis guide for Neuroscience Concentrators

The senior thesis in neuroscience is the culmination of original research conducted by the student with the guidance of a faculty member in the Princeton Neuroscience Institute (including associated and affiliated members). This comprehensive written work, ideally, is the application of the skills learned in coursework, Junior tutorials and Junior papers to an original research project. It’s worth noting that a number of students generate original findings that are eventually incorporated into peer-reviewed scientific articles.

There are two basic senior thesis formats: 1) an experimental, laboratory-based thesis and 2) a non laboratory-based thesis.

1. **Experimental (laboratory) thesis research**
   You will work both independently and under supervision to plan and conduct experiments to advance scientific knowledge, with due attention to proper controls. You will be expected to analyze and interpret critically the results of experiments, to use the conclusions of individual experiments to plan and revise subsequent experiments and to integrate your knowledge from all sources.

2. **Non-laboratory thesis research**
   You will work both independently and with the input of your adviser to carry out question-driven research culminating in an original, critical analysis of a topic directly related to neuroscience. Methods may include collection and meta-analysis of data. The non-laboratory thesis is not a literature review.
Format: some general guidelines

Laboratory thesis: Should not exceed 25,000 words, excluding figure legends, bibliography and appendices.

Non-laboratory thesis: Should not exceed 50,000 words, excluding figure legends, bibliography and appendices.

Figures. There is no limit on the number of figures. Figures should be embedded in the appropriate location in the text (i.e., in-line figures, near where the figure is first referred to in the main text). Figures should not be separate pages in the back of the thesis.

Other formatting details. You should use whatever line spacing, font size, margins, etc. that you feel makes your presentation optimal for the reader.

Concision. All faculty value concision and clarity in writing as these typically reflect clarity in thinking. The above word limits are indeed “limits” not goals to reach.

Submission

Due date: May 7, 2018

A PDF of the thesis should be emailed to both your adviser and the undergraduate student administrator, Paryn Wallace (parynw@princeton.edu).

Hard bound copies are not required for submission but you should ask your adviser if they would like one.

Deadline extensions. These will only be granted for a documented illness (requires a note from McCosh) or exceptional circumstances with the written approval of the adviser (cc the Departmental Representative, Prof. Asif Ghazanfar). Extensions beyond the Dean’s Date (May 15, 2018) can only be granted by your college Dean and with the approval of the Undergraduate Studies Committee. These will only be considered under extreme circumstances.

Any theses submitted after the deadline or after an officially approved extended deadline will be penalized one-third of a letter grade per day. Deadline violations also preclude a student from receiving departmental honors.
Re-use of Junior paper material

Since the senior thesis typically follows the research proposal put forth as the spring junior paper, it often makes sense to re-use material from the junior paper. If that is the case, you must either

1. Cite your junior paper (and list in the bibliography) as you would any other paper

   OR

2. Make a note in the relevant section of text with the following form: “This section contains text that is based closely on, or identical to, text found in my junior paper (<year>).”

Grading

Each thesis is read and graded by the student's adviser and one other neuroscience faculty member assigned by the Departmental Representative.

Oral exam. In addition to submitting the thesis document, students are required to present their work to the adviser and other faculty reader in a 30-minute oral exam. For the oral exam, students should prepare a short Powerpoint-style presentation that explains the scientific problem, the relevant background, the student’s hypotheses, results, conclusions and future directions.