NSCI 490/491 Student Contract

As a student conducting year-long independent research for Yale College course credit and to fulfill the senior requirement for the NSCI B.S. degree, I agree to the following:

I am expected to devote an average of 10-12 hours per week in the lab to this research. I am aware that failure to do so will result in my withdrawal from the course. I will make every effort to attend my research mentor’s laboratory meetings, and present my research at least once/term in my research mentor’s lab. I will attend the NSCI Oral Presentation sessions in the spring and will present my research. I will make every effort to schedule my presentation at a time that fits my mentor’s schedule.

Name: ____________________________________________________________ (please print)
Signature: ___________________________________________ Phone: ___________ Class: ______
Email Address: ________________________________________________________________________________________
Research Mentor: ___________________________________________ Dept.: __________________ (please print)
Title for Research: ___________________________________________________________________________________

NSCI 490/491 Research Mentor Contract

I will expect that each student in my laboratory commit an average of at least 10 hours effort per week in the lab. If this is not the case, by mid semester of the term I will notify the student and the NSCI 490/491 coordinators that an increase in effort is expected. I am aware that failure to meet this expectation will result in withdrawal from the course. I expect students in my laboratory to attend our laboratory meetings and present their research at least once/term in the lab. I will attend my student’s NSCI Oral Presentation in the spring. If I am unable to attend, I will ask another member of my laboratory to attend.

Student: ____________________________________________________________ (please print)
Research Mentor: _______________________________________________________ (please print)
Signature of Research Mentor: _____________________________________________
Department: ___________________________ Phone: __________________________
Email Address: ______________________________________________________________________________________

It is the Student’s responsibility to obtain the signatures and upload this form to the Canvas Assignment section. If you have questions, contact your NSCI registrar.

Due dates:
Student and Mentor Contracts; 1 Page Summary: WEDNESDAY, SEPTEMBER 8, 2017
Spring Oral Presentations: TBA (early April)
Final Report:
   Fall: FRIDAY, DECEMBER 9, 2017
   Spring: FRIDAY, APRIL 28, 2018
NSCI 490a/491b – Empirical Senior Research Requirement

To: Prospective NSCI 490/491 students
From: Senior Empirical Research Coordinators, Damon Clark and Nicholas Turk-Browne

Below is an introduction and guidelines to the NSCI 490/491 course. Students should check the Canvas course site for additional information.

Course Overview:

The main purpose of this course is to enable you to obtain hands-on experience with basic research as part of your education at Yale. The course entails two semesters of experimental work (the minimum time expectation is 10-12 hours per week in the lab) aimed at generating data from experimental strategies designed to test an interesting research question. Only NSCI seniors may take this course, and only to fulfill the Senior Requirement for the NSCI B.S. degree.

All papers should be uploaded to the Assignment section of Canvas by the deadlines stated. Additionally, please include a cover page with the following information: (a) title of research, (b) student name, (c) course and term (e.g., NSCI 490 F17), and (e) PI name. Make sure to include a header on pages 2 through end with: (a) student name, (b) course and term, and (c) page number. Papers must be uploaded in PDF format using the following nomenclature: StudentLastName_FirstName_Course_Term&Year.pdf. Don’t forget to send a copy to your PI (research mentor)!

Safety Requirements:

Note that you will need to fulfill various safety and associated requirements to begin research, depending on your field of study. You will not be able to start your experiments until these requirements are fulfilled. For further information, call the University Safety Dept. at 5-3550.

If your proposed research involves animal use your professor must have an approval for this protocol from IACUC. Your professor must send a new form to IACUC to include you in the protocol once your project has been approved. Finally, if you have not already done so, you need to complete an IACUC course before research can begin.

If your proposed research involves human subjects your professor must have an approval for this protocol from HIC or HSC. Your professor must send a new form to the relevant IRB to add you to the protocol, once your project has been approved. Finally, if you have not already done so, you need to complete a human research ethics course before research can begin.

Course Requirements:

Student and Research Mentor Contracts: due 1 week after start of classes

These should be uploaded to the Assignments section of Canvas. Blank contracts are attached to these guidelines.

Course Proposal: due 1 week after start of classes

A 1-2 page double-spaced summary of your empirical research project (written in collaboration with your research mentor) is due at the beginning of the year. This should include a 0.5–1 page overview/background of the project (documented with a short bibliography) and a section describing the general objectives, hypothesis to be tested, and most importantly, the specific aims of your project. For guidance, ask your mentor for an example Specific Aims section of a grant.

Empirical research can include: obtaining and analyzing new data, performing new analyses on public or private data, or creating quantitative models to explain data. If you are considering a project that does not fall into one of the categories above, please discuss this with the mentor and coordinators prior to committing to the laboratory or project (there may be suitable alternative projects in the same lab).

Time Commitment

We are particularly concerned that each student fulfills the minimum 10-12 hours per week research commitment in the lab; part of the Mentor’s Contract is to verify that level of participation by mid-semester. If for any reason you are unable...
to fulfill your commitment to the course and laboratory, you will be asked to withdraw from the course. Note, if you are a senior planning on attending multiple interviews for medical school in the Fall, you are expected to make up for lost time.

**Grant Proposal – FALL:** due last day of classes

A 5-page (double spaced) Grant Proposal must be uploaded to Canvas under Assignments with the following sections patterned after the format of an NIH or NSF Grant:

- Specific Aims
- Background and Significance
- Research Plan
- Preliminary Results
- Bibliography
- Figures and Legends can be embedded

**Oral Presentation – SPRING:** due early April (specific date TBA)

All students in NSCI 490/491 are expected to give a capstone oral presentation on their research at the end of the Spring term. All students should try to find a mutually agreeable time with their Research Mentors for their presentation.

These presentations should be made using presentation software such as PowerPoint or Keynote. We will have a digital projector available; however, you should plan on bringing your own laptop to plug into the system with appropriate connectors. Talks will be 15 minutes followed by 3-5 minutes for discussion/questions. Time and presentation order will be enforced. Slides should be uploaded to the Canvas Assignment section at least 2 days before the scheduled presentation. Individual slides should be simple and not overloaded with text. Many skilled presenters find it effective to present only one key idea on each slide, as a general rule, and to provide a title on each slide. This idea is often best conveyed graphically rather than via text. Your talk should include an introduction of the overarching neuroscience question that you addressed, an explanation of the approach you took to tackle this question, your results, and the conclusions. Your objective should be to make your presentation clear and interesting to individuals who do not share your background. It is extremely important to define any technical terms and to avoid acronyms. You should assume that the audience does not know the terminology or background of your subfield.

Practice your talk!! Give a practice talk to the lab you are working in before you give it officially. As noted in the Research Mentor’s contract, his/her attendance at the session at which you are presenting is expected; if she/he cannot attend, you should arrange for someone else from your lab to attend. Consequently, consult your research mentor at the beginning of the term to select a date that fits with her/his schedule.

**Research Article – SPRING:** due last day of classes

A 25-30 page double-spaced paper in the form of a typical Research Article is due on the last day of classes uploaded to the Assignment section in Canvas.

Well in advance of this deadline, you should meet with your research mentor to plan a general outline for your paper and engage them in continued discussions throughout the writing process. You should conform to any other specifics that your mentor might expect in your write-up. The research mentor should grade the final version of the report and return it to us with comments electronically along with a recommendation for an overall course grade. Your research mentor will be contacted directly with grading information near the end of the term.

The article should follow the formatting guidelines of a journal in the field of neuroscience with longer articles, such as *Neuron, PLOS Biology,* or *Cerebral Cortex.* Please consult each journal website for exact requirements.

**Grading:**

The final grade will take into account the research mentor’s recommendation on the level and quality of effort in the laboratory and the quality of the final research report, combined with the course coordinators’ evaluation of the oral presentation. The mentor will be asked to recommend an interim grade of satisfactory (S) or unsatisfactory (U) at the end of the Fall term based on laboratory effort and the grant proposal. Students receiving an unsatisfactory grade will be asked to meet with the coordinators and the mentor to identify problems and outline strategies for improvement. In the Spring term, students will receive a letter grade that will be applied retroactively to the Fall term.