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 Poster Symposium in the spring and will present my research.

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 Poster Symposium 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: FRIDAY, September 7, 2018

Final Report:

Fall: FRIDAY, DECEMBER 7, 2018
Spring: FRIDAY, APRIL 26, 2019
NSCI 490/491 - Guidelines

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

Below is an introduction and guidelines to the NSCI 490a/491b 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 FRIDAY, September 7, 2018

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

Course Proposal: due FRIDAY, September 7, 2018

A 1-2 page double-spaced summary of your empirical research project (written in collaboration with your research mentor) is due Friday, September 7, 2018. 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).
NSCI 490/491 - Guidelines

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: Friday, December 7, 2018

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

Spring Poster Symposium: Due Date: TBD

The Poster Symposium is a mandatory session that will be held (TBD). The purpose of the symposium is to share information and more specifically to highlight undergraduate research at Yale. Refreshments will be provided courtesy of the MCDB Dept. The symposium will be open to anyone wishing to attend, so please encourage friends, colleagues and other students to come. Your research mentor is strongly urged to attend.

**Each student must prepare a poster.** Posters can be as large as 3' X 5', but may be smaller. We will have poster boards and easels available to put your poster on. Posters should be printed professionally, if possible. Students should check with their mentor to see if they can cover printing costs. If not, limited funding is available from the DUSs on a first-come-first-serve basis. Alternatively, a student may use a color printer and assemble individual sheets onto the poster board.

Posters should have a title, and the authors (including you and your research mentor) should be listed as well, usually in large letters at the top. Indicate which research course you are in (NSCI 490). The poster should include three sections: Introduction, Results, and Conclusions. The Introduction explains the purpose of your project; the Results section contains figures and/or tables showing your data, with legends or commentary; the Conclusion summarizes what you learned. Feel free also to include what you would do next were you to continue working on the project.

If you continue in research, the first presentation you are likely to give at a scientific meeting is a poster, so this will be good practice. The fewer words and the LARGER THEY ARE WRITTEN make it easier for people to notice and examine your poster. If a poster contains a great deal of text in small font, the audience may not read it. The same applies to data. Tables with large numbers of entries may be ignored. Simple figures with a concise conclusion for each are optimal. You should begin to organize your poster well in advance and you should allow at least one day for planning it and at least one day for producing the various parts of it. Bring it to the session ready to assemble. Please keep in mind that content should take precedence over form. It is much more important that your poster be clear, informative, and thoughtful than that it look highly professional. Aesthetic appeal is of course nice, but the science is paramount. Finally, **discuss your presentation with your colleagues and research mentor well before the session** and if you have any further questions/concerns bring the preliminary poster to show the instructor in charge.
Research Article – SPRING: due Friday, April 26, 2019

A 25-30 page double-spaced paper in the form of a typical Research Article is due Friday, April 26, 2019 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 Poster Symposium. 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.