

## Spring 2021 Ind Sty in CBN (01:146:202) syllabus

**Credit:** 4-5 hours of remote research per week for each applied research credit

### **Prerequisites:**

- Biology 115/116 or equivalent
- Cumulative GPA of 2.8 (or permission of the course coordinator)
- Acceptance into a research laboratory
- Project approval from the course coordinator
- a CBN major or a student intending to major in CBN

**Course coordinator:** Dr. Shu C. Hsu

**Email:** [hsu@biology.rutgers.edu](mailto:hsu@biology.rutgers.edu)

### **Research credit application:**

Procedure: email the research coordinator

1. a completed research application form from the CBN “Research for credits” site.
2. a 1- or 2-page research proposal written in coordination with your laboratory research mentor to describe your research project and your role in the research project.

Research project approval: the fulfillment of 4 criteria is necessary for research project approval

1. The research project must involve a molecule, a cell or the nervous system.
2. The research project should have a research component to train students in scientific methodology and a mentoring component to train students in scientific data analysis.
3. Student must be involved in the analysis of research data.
4. The head of the laboratory is a Rutgers/RWJMS faculty

In the event that in-person undergraduate research is not permitted on campus, literature search or remote data analysis under the mentorship of a Rutgers/RWJMS research laboratory will be permitted to fulfill the CBN research requirement.

**Spring research application deadline:** Feb 19, 2020

**Spring progress report deadline:** April 23, 2021 (two weeks before the beginning of the reading period)

### **Course description:**

This course aims to provide students a capstone experience to apply and further their classroom knowledge in research under the mentorship of Rutgers/RWJMS laboratories.

To gain maximal experience from this research program, students should:

- Arrange course schedules to accommodate a minimum block of 8-10 hours of free time each week for laboratory research.
- Find a laboratory of interest by reviewing lab research websites at CBN “Research for credits” website. Email laboratory professors to apply for acceptance into a laboratory for undergraduate research.

Six credits of CBN Junior and Senior research can be used to fulfill the CBN major elective and lab requirements.

### **Course learning goals:**

1. Master factual and conceptual knowledge in cell biology and neuroscience that will provide a solid foundation for success in advanced training and professional careers.
  - Familiar with scientific methodology to acquire research data.
  - Understand how to implement experiments correctly from laboratory protocols.
  - Understand how to troubleshoot and modify experimental procedures.
2. Develop an ability to summarize, integrate and organize information.
  - Know how to keep organized and update records of all experimental activities and observations.
  - Know how to summarize, integrate and compare literature information relevant to the research project.
  - Know how to organize data and literature information to write comprehensible and accurate science reports.
3. Use scientific reasoning to evaluate the potential for current research and new discoveries to improve our understanding of cell biology and neuroscience and its relevance to human health and to our society.
  - Know how to formulate a workable hypothesis based on proposed research project.
  - Know how to analyze research and literature data in unbiased and quantitative manner.
  - Know how to draw supported conclusions from available research and literature data to prove or disprove research hypothesis and plan future directions.

### **Course format:**

#### Laboratory research component:

- Students are expected to complete a minimum of 4-5 hours of laboratory research per week for each applied research credit.
- Once accepted into a laboratory, students should work out a mutually workable research schedule with their research mentors. It is recommended that students do not change that schedule without prior communication with their research mentors. Student research effort in the laboratory is part of a student's research grade.

#### Research progress report component:

- A seven-page progress report in the format of a scientific manuscript is due, at the latest, two weeks before the beginning of the reading period.
- The progress report must be submitted to the research mentor AND to the Canvas course "Assignments" site.

#### Progress report resources:

- At the Canvas course "Modules/Student resources" site, students can find
  - FAQs about laboratory etiquette and how to write a research progress report

- a template for the progress report
- a writing checklist for the progress report

### **Course grade:**

-Student grades will be determined by the faculty research mentors and submitted directly to the course coordinator. Before the grade submission deadline, research mentors will be notified to submit student research grades based on student research effort and progress report quality. A copy of suggested guidelines for research grade assignment that will be sent to all research mentors can be found at the Canvas course “Modules/Student resources” site. The grade ranking is as follows:

- A** = excellent research effort and progress report
- B+** = very good research effort and progress report
- B** = good research effort and progress report
- C+** = OK research effort and progress report
- C** = barely passable research effort and progress report
- D** = unsatisfactory research effort and progress report
- F** = unacceptable research effort and progress report

### **Course technical requirements:**

- A laptop capable of word processing and figure preparation to write the research progress report.
- Additional requirements may be needed per research mentor request.

### **Academic Integrity Policy:**

<http://academicintegrity.rutgers.edu/academic-integrity-policy>

Resources for Students:

<http://nbacademicintegrity.rutgers.edu/home-2/for-students/>

Violations include: cheating, fabrication, plagiarism, denying others access to information or material, and facilitating violations of academic integrity.

### **Student-Wellness Services:**

*Just In Case Web App*

<http://codu.co/cee05e>

Access helpful mental health information and resources for yourself or a friend in a mental health crisis on your smartphone or tablet and easily contact CAPS or RUPD.

*Counseling, ADAP & Psychiatric Services (CAPS)*

(848) 932-7884

17 Senior Street, New Brunswick, NJ 08901

[www.rhscaps.rutgers.edu/](http://www.rhscaps.rutgers.edu/)

CAPS is a University mental health support service that includes counseling, alcohol and other drug assistance, and psychiatric services staffed by a team of professional within Rutgers Health services to support students' efforts to succeed at Rutgers University. CAPS offers a variety of services that include: individual therapy, group therapy and workshops, crisis intervention, referral to specialists in the community and consultation and collaboration with campus partners.

***Crisis Intervention:***

<http://health.rutgers.edu/medical-counseling-services/counseling/crisis-intervention>

Report a Concern: <http://health.rutgers.edu/do-something-to-help>

***Violence Prevention & Victim Assistance (VPVA)***

(848) 932-1181

3 Bartlett Street, New Brunswick, NJ 08901

[www.vpva.rutgers.edu](http://www.vpva.rutgers.edu)

The Office for Violence Prevention and Victim Assistance provides confidential crisis intervention, counseling and advocacy for victims of sexual and relationship violence and stalking to students, staff and faculty. To reach staff during office hours when the university is open or to reach an advocate after hours, call 848-932-1181.

***Disability Services***

(848) 445-6800

Luce Stone Hall, Suite A145, 54 Joyce Kilmer Avenue, Piscataway, NJ 08854

[/ https://ods.rutgers.edu](https://ods.rutgers.edu)

Rutgers University welcomes students with disabilities into all of the University's educational programs. In order to receive consideration for reasonable accommodations, a student with a disability must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation: <https://ods.rutgers.edu/students/documentation-guidelines>. If the documentation supports your request for reasonable accommodations, your campus's disability services office will provide you with a Letter of Accommodations. Please share this letter with your instructors and discuss the accommodations with them as early in your courses as possible. To begin this process, please complete the Registration form on the ODS web site at: <https://ods.rutgers.edu/students/registration-form>.

***Scarlet Listeners***

(732) 247-5555

<http://www.scarletlisteners.com>

Free and confidential peer counseling and referral hotline, providing a comforting and supportive safe space.