

01:185:350 Fundamentals of Cognitive Neuroscience

<https://canvas.rutgers.edu/>

****NOTE:** For Spring 2021, this course is scheduled for remote instruction. This course will be offered in the following format: synchronous remote-having scheduled meeting times. The scheduled meetings times per WebReg are: Tuesday, Friday 10:20 AM – 11:40 AM. The course will take a hybrid approach, with some coursework being done synchronously (in real-time) and some asynchronously (not in real-time). The lectures will also be recorded (when possible) and provided asynchronously.

Spring 2021 Meeting Days, Times, and Venues

Tuesday, Friday 10:20 AM - 11:40 AM

Index Number: 08304

Via Zoom

Instructor's Name

Professor Mimi Phan

mphan@scarletmail.rutgers.edu

Office hours: day, time and location: *by appointment.*

List of Required Books &/or Materials

- 1) Cognitive Neuroscience: The Biology of the Mind, 5th Edition by Michael S. Gazzaniga (Author), Richard B. Ivry (Author), George R. Mangun (Author)
ISBN-13: 978-0393603170
ISBN-10: 0393603172
- 2) Supplemental primary research articles will be posted on Canvas throughout the semester.

Technology/Software Requirements:

Software:

Rutgers Box account: (<https://box.rutgers.edu/>)

Rutgers Zoom Account: (<https://it.rutgers.edu/zoom/>)

Technology:

Computer: Laptop or desktop computer. A tablet may be used in some cases.

Internet Connectivity: Preferably a high-speed connection. You may also use a wireless hotspot through your mobile provider.

Microphone (optional): This may be built into your device, but an external microphone or headset will provide better sound.

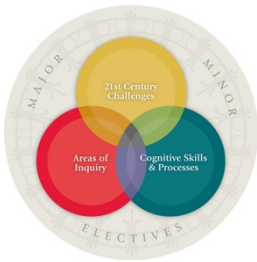
Webcam (optional): Many computers have one built in, but you can easily connect an external USB camera.

Note:

Learning remotely presents new challenges. For assistance with learning how to address these challenges, please consult the resources available here: https://rlc.rutgers.edu/remote_instruction

Please visit the [Rutgers Student Tech Guide](#) page for resources available to all students. If you do not have the appropriate technology for financial reasons, please email Dean of Students deanofstudents@echo.rutgers.edu for assistance. If you are facing other financial hardships, please visit the Office of Financial Aid at <https://financialaid.rutgers.edu/>.

Learning Goals



Description

How does our brain give rise to our abilities to perceive, act and think? This course explores the cognitive and neural processes that support attention, learning, memory, language, and guided behaviors with an emphasis on the neural mechanisms that form the substrates of human cognition. It introduces basic neuroanatomy, functional imaging techniques, and behavioral measures of cognition, and discusses methods by which inferences about the brain bases of cognition are made. This course also provides a survey of current research in cognitive neuroscience. Representative topics include perceptual and motor processes, decision making, learning and memory, attention, reward processing, reinforcement learning, sensory inference and cognitive control.

Learning Objectives - Students Who Complete This Course Will:

1. Understand the methods used to study human cognition and its neural substrates.
2. Understand how neural functions support cognitive processes and how multiple cognitive processes are interdependent.
3. Be able to read, interpret, and critique experimental evidence pertaining to current theories and hypotheses in cognitive neuroscience.
4. Be able to organize information about cognitive neuroscience in a clear and concise manner.

Diversity & Inclusion Statement

Excerpted (<http://inclusion.rutgers.edu/>):

“The Division of Student Affairs works to create an environment of inclusion which respects and affirms the inherent dignity, value, and uniqueness of all individuals, communities and perspectives. Our practices reflect awareness and understanding of the complexity of identity and the increasing interconnectedness of our world. It is our responsibility to promote and maintain a community of compassion,

embracing the rich dimensions of diversity, and facilitating opportunities for understanding and the expression of both individual and shared truths.”

We understand that our members represent a rich variety of backgrounds and perspectives. The Psychology Department is committed to providing an atmosphere for learning that respects diversity. While working together to build this community we ask all members to:

- share their unique experiences, values and beliefs
- be open to the views of others
- honor the uniqueness of their colleagues
- appreciate the opportunity that we have to learn from each other in this community
- value each other’s opinions and communicate in a respectful manner
- use this opportunity together to discuss ways in which we can create an inclusive environment in this course and across the Rutgers University community

Current Academic Integrity Policy and Honor Pledge:

Overview: Rutgers University takes academic dishonesty very seriously. By enrolling in this course, you assume responsibility for familiarizing yourself with the Academic Integrity Policy and the possible penalties (including suspension and expulsion) for violating the policy. As per the policy, all suspected violations will be reported to the Office of Student Conduct. Academic dishonesty includes (but is not limited to):

- Cheating
- Plagiarism
- Aiding others in committing a violation or allowing others to use your work
- Failure to cite sources correctly
- Fabrication
- Using another person’s ideas or words without attribution–re-using a previous assignment
- Unauthorized collaboration
- Sabotaging another student’s work in doubt, please consult the instructor

Honor pledge: All students will need to sign the Rutgers Honor Pledge on every major exam, assignment, or other assessment as follows:

- *On my honor, I have neither received nor given any unauthorized assistance on this examination (assignment).*

Summary:

<http://nbacademicintegrity.rutgers.edu/home-2/academic-integrity-policy/>

Resources for Students:

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

Self-Reporting Absence Application:

Students are expected to attend all classes; if you expect to miss one or two classes, please use the University absence reporting website <https://sims.rutgers.edu/ssra/> to indicate the date and reason for your absence. An email is automatically sent to me.

Please note: Attendance. Attending class is essential to the learning process. Please don't be late to class and be in attendance every time. Regular class attendance is expected; however, you will not be penalized for missing class. Please note: some exam questions will be drawn from material presented in the lecture that is not repeated in the textbook; thus, it is in your best interest to attend all classes. Our time is short and swift in this face-paced format. If you miss a class meeting, you will still be responsible for material covered in class.

Course Structure and Requirements

Course Requirements

General course requirements/notes:

1. **CANVAS.** It is expected that all students will regularly access CANVAS for course announcements and materials. Please also make sure that you check your Rutgers email regularly.
2. **University e-mail accounts** should be checked at least daily by the student because this will be the primary means for sending information to the class or contacting individual students. Failure to monitor your e-mail effectively is not an excuse for not having course information or for not following up on course issues in a timely manner.
3. **Regular access to a computer** with Internet.
4. **Late assignments.** Assignments not handed in before the beginning of lecture at 3:20pm are considered LATE – no exceptions! Submitting your work any time after this on the same day will result in a 10% penalty. Each day after will result in a further 20% penalty.
5. If you are not performing as well as you would like it is your **responsibility to meet with me.** I am here to help you learn.

Exams And Other Assessments**Percentages**

Midterm 1	17.5%
Midterm 2	17.5%
Weekly Discussion Reflections	5.0%
Literature Critique/Poster Presentations	35.0%
-----submit Literature Critique/Poster Presentation topic for approval	5%
-----submit Literature Critique/Poster Presentation draft for comments	10%
-----submit Final Literature Critique/Poster Presentation	20%
Cumulative Final Exam	25.0%

Final grades will be determined by the following (standard Rutgers grading scale):

90.00 % and above	A
85.00-89.99%	B+
80.00-84.99%	B
75.00-79.99%	C+
70.00-74.99%	C
60.00-69.99%	D
below 60.00%	F

Make-Up Policy

No make-up exams will be given unless arrangements are made prior to the day of the exam/assignment due date or written proof of unavoidable absence is provided (e.g., doctor's note; religious and intercollegiate athletics absences). Make-up exams may be in essay format. If exceptional circumstances prevent you from taking an exam (e.g., car accident), it is important that you contact the instructor within 24 hours. In some circumstances without a documented but still valid reason for your absence on an exam day, you may take a make-up exam with a 10-90% deduction in points (at the instructor's discretion).

Midterm/Finals

-multiple choice and short answer questions

Literature Critique/Poster Presentation

The goal of this assessment is to get students to read original research articles with a focus on the methods used to investigate the question under consideration. Students must review **2 articles** that address a common topic, but use two different methods (e.g., patient study and functional imaging study; single cell recording and patient study). It is highly recommended that students discuss their planned topic with the instructor prior to the due date. For the critique, you will be graded per a detailed rubric. For the poster, you will be graded on the content, format and presentation of the poster.

For this assessment, students have two options (choose 1).

Option 1

Produce a written critique of the articles (3-5 pages; double-spaced). Late papers will be penalized. These critiques should 1) summarize the articles, 2) describe potential drawbacks, 3) provide recommendations for how to address the criticisms you have raised.

Option 2

Create a poster with the following content, listed below. You have a choice of presenting the poster “live” or pre-recorded during our class Meeting.

- a. Summary of the articles (with appropriate figures)
- b. Discussion/critique of the articles
- c. Future experiments that build upon the findings

Changing Grades

Students sometimes ask professors to change final grades, usually based on the need to achieve a certain grade in order to, for example, get into the business school, retain a scholarship, or avoid academic probation. Although I wish all of you the best of success in your studies, you hopefully can understand how changing one student's grade is unfair to the other students in the class. Therefore, requests for exam score or grade changes will not be entertained. Your final grade will be based solely on the your scores on the course exams and literature critique or poster presentation.

Schedule of Course Topics

Note: Supplemental primary research articles will be posted on Canvas throughout the semester

PART I Background and Methods:

Week 1	Ch 1 A Brief History of Cognitive Neuroscience
Week 2	Ch 2 Structure and Function of the Nervous System
Week 3	Ch 3 Methods of Cognitive Neuroscience

PART II Core Processes:

Week 4	Ch 4 Hemispheric Specialization
Week 5	Ch 5 Sensation and Perception ----- <i>Midterm 1 (#1-4)</i>
Week 6	Ch 5 Sensation and Perception / Ch 6 Object Recognition
Week 7	Ch 6 Object Recognition / Ch 7 Attention -----submit Literature Critique/Poster Presentation topic for approval
Week 8	Ch 8 Action
Week 9	Ch 9 Memory ----- <i>Midterm 2 (#5-8)</i>
Week 10	Ch 10 Emotion
Week 11	Ch 11 Language -----submit Literature Critique/Poster Presentation draft for comments

PART III Control Processes:

Week 12	Ch 12 Cognitive Control
Week 13	Ch 13 Social Cognition / Poster Presentations (if needed)
Week 14	Ch 14 Consciousness, Free Will, and the Law / Poster Presentations (if needed)
Week 15	Literature Critique/Poster Presentations
Exam Period	-----Final Exam TBD https://finalexams.rutgers.edu/

Student-Wellness Services: **All of these services are being provided remotely during Fall 2020.**

Counseling, ADAP & Psychiatric Services (CAPS)

(848) 932-7884 / 17 Senior Street, New Brunswick, NJ 08901/ <http://health.rutgers.edu/medical-counseling-services/counseling/>

CAPS is a University mental health support service that includes counseling, alcohol and other drug assistance, and psychiatric services staffed by a team of professionals 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/

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 / Lucy Stone Hall, Suite A145, Livingston Campus, 54 Joyce Kilmer Avenue, Piscataway, NJ 08854
<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>.