

**Cognitive Neuroscience Through Case Studies**

(01:185:430:01 &amp; 01:185:430:02)

**Fall 2022****Instructor:** Professor Karin Stromswold**E-mail:** [kstrom@rutgers.edu](mailto:kstrom@rutgers.edu)**Lecture Time/Location:** SEC

Mondays &amp; Wednesdays, 3:50 PM - 5:10 PM

**Office hours:** TBA**Canvas site:**<https://rutgers.instructure.com/courses/187008>**Recitation leader:** Dr. C. Jane Lutken**Email:** [c.jane.lutken@rutgers.edu](mailto:c.jane.lutken@rutgers.edu)**Recitation 1:** Thursdays, 4:05- 5:00 PM, SEC 216**Recitation 2:** Tuesdays, 4:05- 5:00 PM, SEC 216**Office hours:** TBA

**Overview of course:** In this course, we will explore the cognitive and neural bases of a wide range of human abilities by learning about experiments with people who are neurologically intact and by studying cases of people who have acquired or developmental brain disorders. The goal is that, by the end of the course, you will be knowledgeable about the techniques used in cognitive neuroscience and the structure and function of the human brain in people who do and do not have acquired or developmental brain disorders.

**TENTATIVE SCHEDULE**

Dates	TOPIC	Readings
Wed 9/7	Introduction to cognitive neuroscience	Ward, chapter 1, Ogden (2005) chapter 1
Mon 9/12	Overview of the human brain	Ward, ch 2 & 6 (pp 118-122); Macmillian (2008),
Wed 9/14	Methods in cognitive neuroscience:	Ward, chapters 3, 4 & 5. Konnikova (2013).
Mon 9/19 Wed 9/21 [Mon 9/26]	Vision [Lecture on Mon 9/26 will be prerecorded/asynchronous]	Ward, chapter 7. Sacks (2002). The Case of Anna H.
Wed 9/28 Mon 10/3	Attention	Ward, Chapter 9. Ogden, J. (2005). Out of Mind, Out of Sight.
[Wed 10/5] Mon 10/10	Movement & sensation [Lecture on Wed 10/5 will be prerecorded/asynchronous.]	Ward, Chapter 10. Colapinto, J. (2009). Brain Games
Wed 10/12 Mon 10/17	Memory	Ward, Chapter 11. Zalewski (2015). Life Lines. Shapen (2013). The Man Who Forgot Everything
<b>Wed 10/19</b>	<b>Test 1: 3:50 pm – 5:10 pm via Canvas</b>	<b>[You must take exam at this time!]</b>
Mon 10/24 Wed 10/26	Audition	Ward, Chapter 8. Sacks (2009) Things Fall Apart
Mon 10/31 Wed 11/2 Mon 11/7 Wee 11/9	Spoken language	Ward, Chapter 12 Friederici (2011) Ogden (2005). The Breakdown of Language Sacks (2005). Recalled to life.
Mon 11/14 Wed 11/16	Written language	Ward, Chapter 13. Sacks (2010). A Man of Letters.
Mon 11/21 Mon 11/28	Executive function [11/21: Name of case study condition due]	Ward, Chapter 14. Ogden (2005). The Impaired Executive.
Wed 11/30 Mon 12/5	Social/personality/emotion [12/5: citation & pdf of case paper due]	Ward, Chapter 16. Psychopath: Seabrook (2008) <b>OR</b> Haggerty (2017). Sacks 1993. An anthropologist on mars (ASD) [Kluwer Bucy: Devinsky, J, Sacks, O., Devinsky, O. (2010) <b>or</b> Sacks (2015). Urge]
<b>Wed 12/7</b>	<b>Test 2: 3:50 pm – 5:10 pm via Canvas</b>	<b>[You must take exam at this time!]</b>
Mon 12/12 Wed 12/14	Neurodevelopment	Ward, chapter 6 (pp. 129-143). Carroll (2016) & Rymer (1992), Kenneally (2006). The Deepest Cut.
<b>Mon 12/19</b>	<b>5 pm: Case study due</b>	<b>Upload both case study video &amp; slides</b>

### COVID POLICIES

1. Please wear a well-fitting mask at all times.
2. Maintain social distancing as much as possible
3. **Do NOT come to class if you test positive OR you are feeling sick!**
4. If you are sick and can't come to class, let us know ASAP so we can make arrangements.
5. If you are likely to miss more than a week of class, talk to a dean.
6. We will attempt to record all classes and recitations.
7. Lecture office hours will be via Zoom unless special arrangements are made
8. Prepare to be flexible! The structure and content of the course may change. For example,
  - a. We may pivot from in-person to online lectures and recitations (e.g., if we get sick)
  - b. Readings may change
  - c. If we get behind, some topics may be eliminated or abbreviated
9. We will broadcast any changes via Canvas Announcements and email.

### READINGS

**Required textbook:** Ward, Jamie. 2020. *The Student's Guide to Cognitive Neuroscience, 4<sup>th</sup> edition*. Psychology Press. (Please read the chapters in the order they are listed in the schedule!)

#### Preliminary List of Additional Readings (All will be available on Canvas)

- Carroll, R. (2016). Starved, tortured, forgotten: Genie, the feral child who left a mark on researchers. *The Guardian*. July 14, 2016. (Nature/nurture)
- Colapinto, J. (2009). Brain Games: Marco Polo of Neuroscience. *The New Yorker*, May 11, 2009 issue.
- Devinsky, J, Sacks, O., Devinsky, O. (2010). Kluver-Bucy syndrome, hypersexuality and the law. *Neurocase 16, 140-145*.
- Friederici, AD (2011). The Brain Basis of Language Processing: From Structure to Function. *Physiol Rev 91:1357-1392, 2011*
- Hagerty, XX (2017). When your child is a psychopath. *The Atlantic*, June 2017 issue.
- Kenneally (2006). The Deepest Cut. *The New Yorker*, July 3, 2006 issue.
- Konnikova, M. (2013). The Man Who Couldn't Speak and How He Revolutionized Psychology. *Scientific American*.
- Macmillan, M. (2008). Phineas Gage: Unravelling the Myth. *The Psychologist 21(9)*, 828 – 831.
- May-Mederake, B. & Shehata-Dielee, W. (2013) A Case Study Assessing the Auditory and Speech Development of Four Children Implanted with Cochlear Implants by the Chronological Age of 12 Months. *Case Reports in Otolaryngology, Volume 2013*.
- Ogden, J. (2005). Introduction to Neuropsychology. Chapter 1 of *Fractured Minds: A Case-Study Approach to Neuropsychology, 2<sup>nd</sup> edition*.
- Ogden, J. (2005). The Breakdown of Language: Case Studies of Aphasia. From *Fractured Minds: A Case-Study Approach to Neuropsychology, 2<sup>nd</sup> edition*.
- Ogden, J. (2005). The Impaired Executive. From *Fractured Minds: A Case-Study Approach to Neuropsychology, 2<sup>nd</sup> edition*.
- Ogden, J. (2005). Out of Mind, Out of Sight. From *Fractured Minds: A Case-Study Approach to Neuropsychology, 2<sup>nd</sup> edition*.
- Rymer, R. (1992). A Silent Childhood, part I. *The New Yorker*, April 13, 1992, p 41-80 (Nature/nurture)
- Sacks, O. 1993. An Anthropologist on Mars. *The New Yorker*, December 27, 1993. (Theory of mind)
- Sacks, O. (2002). The Case of Anna H. *The New Yorker*, October 7, 2002 issue
- Sacks, O. (2005). Recalled to Life. *The New Yorker*, October 31, 2005 issue.
- Sacks, O. (2009). Things Fall Apart: Amusia and Dysharmonia. From *Musicophilia: Tales of Music and the Brain*. (chapter 8, pp 98-119),

- Sacks, O. (2010). A Man of Letters. *The New Yorker*, June 28, 2010 issue.
- Sacks, O. (2015). Urge. *The New York Review of Books*, June 24 2015 issue.
- Seabrook, J. (2008). Suffering Souls: The Search for the Roots of Psychopathology. *The New Yorker*. November 10, 2008 issue.
- Shapen, S. 2013. HM: The Man Who Forgot Everything. *The New Yorker*, October 14, 2013. (Short term memory)
- Zalewski, D. 2015. Life Lines. *The New Yorker*, March 30, 2015. (Short term memory)

Gonçalves, ÓF, Prieto, MF, Sampaio, A, Pérez, A, Henriques, M, Lima, MR, Fuster, M, Sousa, N and Carracedo, Á (2005) Cognitive profile in William Syndrome: A case study. *The British Journal of Developmental Disabilities* Vol. 51, Part 2 (101), 149-159,

## GRADING

Final grades will be determined by the total number of points earned in the class. Grades will be scaled so that the top-scoring student receives 100 points for the course. For example, if the top scoring student earns 95 points during the course, all students will have an additional 5 points added to their final grade.

Course grades will be assigned as follows:

**A (90-100 points); B+ (85-89 points); B (80-84 points); C+ (75-79 points); C (70-74 points); D (60-69 points); F (<60)**

**Recitation participation** (e.g., attendance, discussion): ~10% of grade

**Assignments** (e.g., taking online tests, administering neuro exams): ~20% of grade

**Lecture quizzes** (short, multiple-choice quizzes on lectures): ~20% of grade

**Case study exam 1** (cumulative essay/short answer): ~15% of grade

**Case study exam 2:** (cumulative essay/short answer): ~15% of grade

**Final project:** Video presentation of a case study: ~20% of grade

**MAKEUPS:** If you know you are likely to miss a deadline because of a legitimate conflict (e.g., family, religious or work obligation), let us know ahead of time! Make up quizzes and exams that have not been OK-ed ahead of time will only be given for **unforeseen reasons** (health, family, work emergencies or events, etc.).

**Students with accommodations for disabilities:** If you are given accommodations, talk to us during the first 2 weeks of the course. In order to receive exam accommodations, you must provide me written documentation regarding the accommodations no later than 7 days before an exam. For more information, please contact Disability Services at (848) 445-6800 / Lucy Stone Hall, Suite A145, Livingston Campus, 54 Joyce Kilmer Avenue, Piscataway, NJ 08854 / <https://ods.rutgers.edu/>

## Recitation PARTICIPATION

Participation in recitations is a critical component of the course. You can earn up to 1 point for each recitation section. Roughly speaking, participation points will be given out as follows

- 0 points: Didn't attend
- 0.5 points: Attended, but did not well on in-class assignments and/or did not make substantive contribution to class discussion
- 1.0 points: Attended, did well on in-class assignments and/or made substantive contributions to class discussion

## EXERCISES/ASSIGNMENTS

Exercises/Assignments may include:

- Administering part of a neurological exam to another person
- Taking an online cognitive or neuropsychological test
- Watching a neurologist or neuropsychologist administering an exam and posting a comment about it
- Watching a brief video of a patient and posting a comment about it

## LECTURE QUIZZES

**Content:** Lecture quizzes assess your basic understanding of the material presented in the lectures. They are designed to be easy, and you should usually be able to answer the questions if you attended that day's lecture.

**Lecture Quiz Passwords:** The password for each lecture quiz is given on the "Announcement" page that precedes the lecture slides for that lecture. The Announcement pages are dated.

### Format:

- Typically between 2 – 6 questions (multiple choice, true/false, matching etc.)
- Untimed, but must be taken during the period the lecture quiz is "live"
- Open book & notes
- Pro-tip: Watch the lecture before taking the lecture quiz
- All work must be done independently!
  - No copying, photographing or recording the questions
  - No collaborations or consultations with anyone else
  - No posting or discussing questions/answers with anyone else
  - Anyone caught GIVING or RECEIVING help on a quiz will get a zero for ALL quiz grades

### Mechanics

- How: Quizzes will be online via Canvas's quizzes section
- When: Monday's lecture quizzes will open around 7:30 pm on Monday night and will close at 3pm on Wednesday afternoon. Wednesday's lecture quizzes will open around 7:30 pm on Wednesday night and will close at 3 pm on Friday.
- How many: ~ 2 per week

### Benefits:

- Tests your basic understanding of material presented in the lecture
- Helps you prepare for that week's quiz
- Incentive for attending the lecture!
- Spaced learning is more effective than cramming!

## CASE STUDY HOUR EXAMS

There will be two open-book, on-line 80-minute essay/short answer exams. **These exams will occur during regular scheduled class period, and you must take them during this 80-minute time period.** The exams will be largely case-based and designed to test whether you can THINK critically about the material presented in the course (and not just spit back facts). For example, essay exam questions may require you to determine where lesions are when given clinical deficits, to predict functional deficits when given location of lesions, to propose tests to investigate what other abilities may be spared/impaired, or to link findings from lesion-deficit studies with findings from functional neuroimaging studies of typical populations.

## CASE STUDY VIDEO PROJECT

For the final project, you will analyze a case study that we did not read or talk about in class. You will create slides and record a 5 – 10 minute video presentation of the case. The case study can come from either a scientific

journal (e.g., *Neurocase*, *Journal of Cognitive Neuroscience* etc.) or the popular press (e.g., *The New Yorker*, *The New York Review of Books*, a case from one of Oliver Sacks' books etc.). In your video presentation, you should

- 1) Give a brief overview of the history of the case (who was the patient, what was the etiology of the disorder, etc.)
- 2) Describe the nature of the functional deficits. Some of the things you should touch on include
  - a. What the patient could do and could not do in everyday life
  - b. The results of any neuropsychological tests that were given
  - c. The results of imaging studies that were done (structural and functional)
- 3) What does this patient's deficits/lesions tell us about the neural bases of the ability?
- 4) If you could do one more test, what would it be? Given your answer to (3), what do you predict the results would show?
- 5) If your patient has the same disorder as one that we covered in class, how are your patient's deficits and lesions similar to, and different from, those of the patient we learned about in the class?

**Final video project grading:** Your video project grade will be based on delivery (~10% of grade), content (~70%), and your slides (~20%).

### Deadlines for final project

- Monday 11/21: Upload to Canvas the name of condition of your case study
- Wednesday 12/5: Upload to Canvas the reference and pdf of your case study paper
- Thursday 12/15: Upload to Canvas a mock version of your video presentation and slides
- Monday 12/19 @ 5 pm: Upload to Canvas the final version of your video presentation and slides

## LECTURE SLIDES/RECORDED LECTURES

At the beginning of a topic, I will post the lecture slides for that topic. I recommend you look over the slides before lecture and download a copy of them to take notes on. Three caveats about the slides

1. The lecture slides are only meant to aid you in taking notes during class, and to remind you of what was covered in class. They are no substitute for attending class/watching the lecture.
2. Because I post the slides BEFORE the lectures, they are subject to change. I recommend that you check the Canvas site periodically (and before each quiz) to make sure you have the most up-to-date version.
3. Despite my best efforts, sometimes the slides will contain typos. If you think you have found a serious typo, tell me during class and/or send email to [kstrom@rutgers.edu](mailto:kstrom@rutgers.edu)

After each class, I will attempt to post recordings of the lecture. I *\*strongly\** recommend you attend the synchronous class because sometimes technical glitches happen, and recordings fail!

### Some hints for doing well in this class:

1. **Attend every class and recitation and take good notes.** If you miss one watch the video. The material stressed in lectures and recitations tends to appear on exams.
2. **Spend 10 minutes immediately after each lecture going over your lecture notes**, reconstructing the lecture and making sure you understand the "key concepts" for the day.
3. **Spend the 10 minutes before each lecture going over the lecture notes** and "key concepts" from the previous class.
4. The lecture quizzes are designed to assess whether you understood the lectures. Always watch the lecture before taking the quiz associated with it!
5. If you were confused in a lecture, watch the video
6. Skim the slides before each class.
7. Use the slides and your lecture notes to guide your reading.
8. If you are having trouble with one of the readings for a topic, try the other reading for the topic.
9. If you don't understand something said in the lectures or in the readings, let me know. Ask a question in class or come to my office hours. Chances are if you are confused, others are too.

10. Use the posted slides, your lecture notes and the "key concepts" to review for the tests.

**11. Come to office hours!**

12. **Ask me questions during lecture.** Feel free to interrupt me! Chances are if you have a question, someone else in the class is wondering the same thing.

13. **Collaborate!** Form a study group (either physical or virtual) and create a group study document.

14. **Do not try to cram.** The material in this course builds on itself, just like in a math or physics course and the exams are cumulative. If you don't learn the material in the beginning of the course, you are going to be lost.

### WARNING ABOUT USING EXTERNAL WEBSITES

All of the materials on this course's site are copyrighted (e.g., syllabus, lecture notes, lecture slides, lectures, study guides, tests, readings, etc.)

- They are exclusively for students enrolled in the course
- You may download resources and edit them for your own personal use
- You may not give or sell the material to anyone who is not enrolled in the course
- **You may not publish or post any of the material to another non-commercial or commercial site. Doing so is illegal!**
- Beware of material that appears on commercial sites! It is often inaccurate, out-of-date etc.

### PLAGIARISM

1. If you copy something that is in print anywhere (books, journals, popular magazines, on-line blogs, mailing lists etc.), you are plagiarizing.
2. Taking someone else's words and substituting a word here or there is still plagiarism.
3. Paraphrasing someone else's words but 'borrowing' their line of argument and reasoning is plagiarism.
4. Even if you are in a pinch and facing a looming deadline, don't plagiarize. It's stealing. **Better to hand in something that is yours than to hand in something that you stole.**

### Rutgers Academic Integrity Policy

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

You are expected to maintain the highest level of academic integrity. You should be familiar with the university [policy on academic integrity](#). Violations will be reported and enforced according to this policy.

Use of external website resources such as Chegg.com or others to obtain solutions to homework assignments, quizzes, or exams is cheating and a violation of the University Academic Integrity policy. Cheating in the course may result in grade penalties, disciplinary sanctions or educational sanctions. Posting homework assignments, or exams, to external sites without the instructor's permission is a violation of copyright and may constitute the facilitation of dishonesty, which may result in the same penalties as plain cheating.

*The Camden Plagiarism Tutorial (INTERACTIVE):*

<http://library.camden.rutgers.edu/EducationalModules/Plagiarism/>

Consult *Don't Plagiarize: Document Your Research!* For tips about how to take notes so that you don't plagiarize by accident. [http://www.libraries.rutgers.edu/avoid\\_plagiarism](http://www.libraries.rutgers.edu/avoid_plagiarism)

## University Resources

**Success.rutgers.edu:** “The faculty and staff at Rutgers are committed to your success. Students who are successful tend to seek out resources that enable them to excel academically, maintain their health and wellness, prepare for future careers, navigate college life and finances, and connect with the RU community. Resources that can help you succeed and connect with the Rutgers community can be found at [success.rutgers.edu](http://success.rutgers.edu), and nearly all services and resources that are typically provided in-person are now available remotely.”

### **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.

### **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 / 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>.

### **Scarlet Listeners**

**(732) 247-5555 / <http://www.scarletlisteners.com/>**

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