

Memory 830:303

Fall 2021

Instructor: Qiong Zhang

Course Modality: Asynchronous content

Prerequisites: General Psychology or Principles of Psychology or Introduction to Psychology

Meeting Times (Zoom): Friday 11:00am to 12:20pm

Office Hours (Zoom): Friday 12:30pm-1:30pm

Email: qiong.z@rutgers.edu

Course Description

Why do some things stick in our memories forever and other things seem to disappear seconds after we experience them? How do our brains organize and spontaneously retrieve memories? What mental processes are involved when sometimes we see someone familiar but cannot recall their names? The field of human memory also has practical applications. For example, how much should we trust eyewitness testimony? Or, should you cram for tomorrow's exam or get a good rest instead?

To answer all these questions, this course will provide an introduction to the scientific study of human memory. We will examine a range of classic and cutting-edge experimental results and theories that form the foundation of our current understanding of how we learn and remember. Topics we will cover include recognition memory, memory search, association formation, memory disorders, memory applications, neural mechanisms of memory, as well as mnemonic techniques.

Every week there will be two short lecture videos uploaded by Monday. Each lecture will be organized around the major empirical paradigms used to study memory in the laboratory and the theories used to explain data obtained using those paradigms.

Each Friday there will be a synchronous session, focusing on walking through some concrete examples and exercises. Additionally, there will be in-class discussions through breakout sessions on zoom to further enhance students' understanding on the lecture material.

Learning Objectives

By the end of the course, students will

1. leave this course with a solid grounding in our current understanding of how we learn and remember
2. learn to critically evaluate theories that describe how memory works and learn to build their own theories
3. be able to characterize major brain mechanisms of human memory encoding and retrieval

4. develop appreciation of how memory theories are applied, and acquire practical knowledge for improving skill acquisition and retention of meaningful material.

Textbook/Resources

The required textbook is Foundations of Human Memory by Michael Jacob Kahana. The book is available at the University Bookstore. There are also online options. There will be optional or required readings from both science magazines and scholarly journals available as PDF files through the class website.

Who should take this course

The course is designed primarily for psychology undergraduates who are interested in understanding the fundamentals of human memory. Undergraduates from other majors such as computer science and mathematics are also welcome to attend the class. Graduate students in psychology can take this course to meet the grad course requirement in memory. Graduate students complete the same course load, with an additional component of an in-class paper presentation.

Coursework Requirements

Every week there will be two short lecture videos uploaded by Monday. Students are expected to complete viewing these videos and finish the corresponding reading materials BEFORE the synchronous session on Friday. Students are expected to arrive in the Friday class with ideas and questions to discuss. Attendance is taken through online in-class quizzes. As long as a response is given for each question, full credits will be given. In-class participation will be recorded. Half of the credits will be given with at least one in-class participation; full credits will be given if the participation level reaches the class median.

There will be four assignments to complete. The students will need to digest class content in order to successfully complete the assignments. Discussion about assignment problems on Canvas is encouraged, but students need to write their solutions entirely on their own.

There will be an in-class mid-term exam and a final exam.

Grade Evaluation

Attendance	10%
In-class participation	10%
Assignments	40%
Mid-term exam	20%
Final exam	20%

Schedule of Classes and Readings

Week 1 (9/3)

Course introduction

Course outline, different types of memory, approaches in memory research

- *Foundations of Human Memory. Chapter 1.*

Week 2 (9/10)

Memory applications I: Classroom learning

spacing effect, practice effect, testing effect

- *Foundations of Human Memory. Chapter 1.*

Memory applications II: Eyewitness testimony

suggestibility, simultaneous and sequential lineup

- *Memory Faults and Fixes*
- (optional) *From the Lab to the Police Station*

Week 3 (9/24)

Recognition memory (Assignment I released)

Strength theory

- *Foundations of Human Memory. Chapter 2.*

Recognition memory

Familiarity and recollection

- *Foundations of Human Memory. Chapter 2.*

Week 4 (10/1)

Recognition memory

Sternberg's procedure

- *Foundations of Human Memory. Chapter 2.*

Recognition memory (Assignment I due)

Processes of recognition memory

- *Foundations of Human Memory. Chapter 2.*

Week 5 (10/8)

Associative memory (Assignment II released)

Major associative tasks

- *Foundations of Human Memory. Chapter 4.*

Associative memory

Major associative tasks

- *Foundations of Human Memory. Chapter 4.*

Week 6 (10/15)

Associative memory

Retrieval errors, Interference theory

- *Foundations of Human Memory. Chapter 4.*

Associative memory

Processes of associative memory

- *Foundations of Human Memory. Chapter 5.*

Week 7 (9/17)

Semantic memory (Assignment II due)

- *No readings this week prior to mid-term exam*

The role of semantic memory

- *No readings this week prior to mid-term exam*

Week 8 (10/22)

In-class midterm exam

Week 9 (10/29)

Free recall

Serial position effects, retrieval dynamics

- *Foundations of Human Memory. Chapter 6.*

Free recall (Assignment III released)

Semantic clustering

- *Foundations of Human Memory. Chapter 6.*

Week 10 (11/05)

Free recall

Intrusion and false recalls

- *Foundations of Human Memory. Chapter 7.*

Free recall (Assignment III due)

Processes of free recall

- *Foundations of Human Memory. Chapter 7.*

Week 11 (11/12)

Memory & the brain I. (Assignment IV released)

Hippocampus and neocortex

- *Review article on A Cortical-Hippocampal System for Declarative Memory.*

Memory & the brain II.

A case study of H.M. patient

- *What's New with the Amnesic Patient H.M.?*

Week 12 (11/19)

Adaptive memory I.

Human memory adapts to the environment

- *Reflections of the Environment in Memory. Psychological Science, 2, 396-408.*

Adaptive memory II. (Assignment IV due)

The functionality of memory bias

- *Book chapter on How Prior Beliefs Affect Memory and Why*

Thanksgiving break (11/26)

Week 13 (12/3)

Mnemonic techniques I.

- *Review chapter on Recent Research on Visual Mnemonics: Historical Roots and Educational fruits*

Mnemonic techniques II.

- *(optional but fun) Ed Cooke's book chapter on How to Memorize All US President Names*

Week 14 (12/10)

Review

Review for homework assignments and information on final exam

Final Exam/Paper Date and Time

Please find information about final exam date and time here:

<http://finalexams.rutgers.edu/>

Academic Integrity Policies

Rutgers University regards acts of dishonesty (e.g. plagiarism, cheating on examinations, obtaining unfair advantage, and falsification of records and official documents) as serious offenses against the values of intellectual honesty.

Cheating on tests or plagiarizing materials in your papers deprives you of the educational benefits of preparing these materials appropriately. It is personally dishonest to cheat on a test or to hand in a paper based on unacknowledged words or ideas that someone else originated. It is also unfair, since it gives you an undeserved advantage over your fellow students who are graded on the basis of their own work.

In this class we will take cheating very seriously. All suspected cases of cheating and plagiarism will be automatically referred to the Office of Judicial Affairs, and we will recommend penalties

appropriate to the gravity of the infraction. The university's policy on Academic Integrity is available at <http://academicintegrity.rutgers.edu/academic-integrity-policy>. I strongly advise you to familiarize yourself with this document, both for this class and for your other classes and future work.

Since what counts as plagiarism is not always clear, I quote the definition given in Rutgers' policy:

Plagiarism: Plagiarism is the use of another person's words, ideas, or results without giving that person appropriate credit. To avoid plagiarism, every direct quotation must be identified by quotation marks or appropriate indentation and both direct quotation and paraphrasing must be cited properly according to the accepted format for the particular discipline or as required by the instructor in a course. Some common examples of plagiarism are:

- Copying word for word (i.e. quoting directly) from an oral, printed, or electronic source without proper attribution.
- Paraphrasing without proper attribution, i.e., presenting in one's own words another person's written words or ideas as if they were one's own.
- Submitting a purchased or downloaded term paper or other materials to satisfy a course requirement.
- Incorporating into one's work graphs, drawings, photographs, diagrams, tables, spreadsheets, computer programs, or other nontextual material from other sources without proper attribution.

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 report before the class to avoid deduction of in-class attendance credits.

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/

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/

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>.