PSY 365 Cognition Syllabus and Lab Manual, Fall 2025

Monday, Wednesday, and Friday
Section 3, 1-1:50 PM, rm. 1310 Au Sable Hall

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Course Description: The course ***Cognition*** delves into the scientific exploration of how the human mind operates.

While the word "scientifically" might evoke images of white lab coats and sterile laboratories, science is not defined by attire, equipment, or subject matter. Instead, it is a method of discovery grounded in systematic, empirical observation, as opposed to intuition or speculation. Rooted in this scientific tradition, our course requires weekly, hands-on replications of foundational experiments in cognitive psychology. During these exercises, you will adopt the roles of a naïve participant, a methodical researcher, and a skeptical peer reviewer.

Although cognitive psychology is a relatively young discipline, the human mind has fascinated people for centuries. Like ancient philosophers, you may have pondered why people think the way they do or believe what they believe. However, unlike philosophers who rely on reasoned arguments, cognitive psychologists use scientific methods to investigate the mental processes underlying thoughts and behaviors. The field examines abstract and intangible concepts such as memory, language, and attention. By employing operational definitions—clear, concise descriptions of how variables are measured or observed—these concepts become concrete, accessible, and amenable to scientific study.

Consider some real-world questions tackled by cognitive psychologists: How can students improve their memory for exams? Should people drive while talking on hands-free cell phones? Does subliminal communication influence advertising? Are there gender differences in cognitive abilities? How can we enhance the accuracy of eyewitness testimony? Insights into basic cognitive processes illuminate not only everyday memory failures (like forgetting to stop at the grocery store), but also pathological conditions. For instance, how do the minds of individuals with dementia or amnesia differ from those of non-impaired individuals? Indeed, cognitive psychology is deeply relevant to every waking moment of our lives.

The operations of the mind are pervasive and often go unnoticed. In this course, your goal is to uncover and appreciate the remarkable feats and occasional lapses of your mind. We will begin with what might be called lower-level processes, such as visual perception, and progress to higher-level processes, like decision-making and language. Along the way, you will discover that even seemingly simple actions—like recognizing a dog—involve a complex interplay of mental processes. Are you ready to embark on a scientific exploration of your mind?

This course is subject to the GVSU policies listed at http://www.gvsu.edu/coursepolicies/

Course Objectives: Upon successful completion of this course students will be able to:

1. Summarize important scientific methods, research findings, and theories of cognition.
2. Evaluate current issues in cognition research.
3. Compare the strengths and weaknesses of various theories of cognition.
4. Explain how cognition is studied empirically.

Course Homepage on Blackboard (lms.gvsu.edu)*:* Class information (e.g., syllabus, announcements, laboratory assignments, readings, lecture slides, & grades) will be posted on Blackboard.

GVSU Saves eBook* and CogLab

Goldstein, E.B. (2019*). Cognitive Psychology: Connecting Mind, Research, and Everyday Experience, 5th Edition.*

Francis, G. & Neath, I. (2015). *CogLab 5, Instant Access* (for 6 months).

*If you want to obtain the eBook and CogLab on your own, you may opt-out by the deadline**,** and your student account will be refunded.

Course Grade Formula:

Course grades will be based on scores from the following, weighted activities:

Exam #1	15%
Exam #2	15%
Exam #3	15%
In-class Quizzes	15%
Laboratory Reports for 13 of 15 Assignments	40%

Letter Grades will be calculated according to the following scale:

A	93-100%	C	73-76%
A-	90-92%	C-	70-72%
B+	87-89%	D+	67-69%
B	83-86%	D	60-66%
B-	80-82%	F	Below
C+	77-79%		

Forms of Evaluation:

1. ***Exams:*** To assess your understanding of course material, there will be three exams, including a non-cumulative final exam. Exams will be administered via Blackboard and will be "open book",

allowing you to refer to your class notes and readings. Questions on the exam will be based on the material covered in the: 1) lectures, 2) assigned readings, and 3) laboratory assignments discussed in class. While taking the exam, you may pause and resume within the exam's availability window. Note that only one question will appear on your screen at a time, and you cannot revisit previously answered questions. Your score (total number correct) will be displayed upon completion. Final grades will be adjusted using a curve after the exam period closes. Refer to the ***Weekly Schedule*** for tentative exam dates.

2. ***Laboratory Participation and Reports:*** The laboratory component aims to deepen your understanding of the scientific process in psychology. Outside of class, you will engage in web-based experimental replications of classic cognitive science studies. These experiments can be completed using GVSU computer labs or your personal computer. For each lab, it is essential to understand: the theoretical foundation of the investigation; procedures and methods, including independent and dependent variables; predicted outcomes (hypotheses); experimental results (expressed in statistics and graphs); potential limitations; and connections to class material and assigned readings.

   Refer to the ***Lab Report Requirements***, ***Lab Report Format***, ***Grading Lab Reports***, **and** ***Sample Lab Report*** for guidance.

   You are expected to submit reports for 13 of the 15 laboratory assignments by their respective due dates (see the ***Schedule***).

   Lab Reports Requirements: Lab reports must meet the following criteria.

   Format and Organization

   - The report must be typed and include all eight required components, clearly numbered (1–8) for ease of reference.
   - If any component is omitted, a brief explanation must be provided.

   Adherence to Guidelines

   - Students are expected to follow the instructions outlined in the ***Lab Report Format***.
   - Instructional language should not be copied verbatim; rather, it should be thoughtfully integrated into original responses where applicable.

   Clarity and Precision

   - All writing must be clear, concise, and grammatically correct.
   - Complete sentences and proper spelling are required throughout.
   - The report should demonstrate logical organization and coherence.

   Depth of Analysis

- Responses to Item #7 (Critique) and Item #8 (Future Directions) must reflect original thought and critical analysis.
- Superficial or one-sentence answers are not acceptable; each response should be a minimum of three well-developed sentences.

File Preparation and Submission

- Reports must be prepared using Microsoft Word or a comparable word-processing application.
- The final document must be uploaded directly to Blackboard; submissions via shared links or email will not be accepted.

Timeliness of Submission

- Reports are due by the stated deadline.
- Late submissions will be accepted for up to one week following the due date and will incur a 30-point deduction.
- Reports submitted more than one week past the deadline will receive a grade of zero.
- Please retain a copy of your report for your records, as it may serve as proof of completion and assist with exam preparation.

Lab Report Format:

1. **Lab Identification:** Begin with a complete sentence that includes the name of the lab and the date you completed the activity.
2. **Data Submission:** Introduce your data with a statement such as, "My data are presented below," and paste your summary graph and data from CogLab.
3. **Independent and/or Predictor Variables:** Identify the independent and/or predictor variable(s) and explain how they were measured or manipulated.
4. **Dependent Variables:** Identify the dependent variable(s) and explain how they were measured.
5. **Hypothesis:** Clearly state the experimental hypothesis being tested.
6. **Data Interpretation:** Evaluate whether your results are consistent with the predicted outcomes, providing a brief rationale.
7. **Critical Evaluation:** Offer a thoughtful critique of the experiment, considering alternative explanations for the observed outcomes. Address potential methodological limitations, overlooked variables, or other relevant weaknesses. Avoid repeating critiques used in other reports; each should be unique and specific to the current experiment.
8. **Future Directions:** Propose specific ways to improve or extend the investigation. Suggestions may include addressing identified limitations, expanding the research context, or applying the theory in a new setting or culture. Each proposal should be original and tailored to the individual lab.

Sample Lab Report

1. The experiment was titled *Risky Decisions* and was completed on December 2, 2023.
2. My summary data for the lab are presented below:

   Summary Data

   Proportion of Gamble Trials:

Condition	Small Gain	Large Gain	Small Loss	Large Loss
Less Risky	0.750	0.750	0.750	1.000
More Risky	0.500	1.000	0.500	1.000

   (Insert graph here, if applicable)

3. The experiment included three independent variables: (1**)** risk level (less risky vs. more risky, based on the odds of winning), (2) outcome type (gain vs. loss), and (3) magnitude (small vs. large monetary value). These factors varied across trials to examine their influence on decision-making.
4. The dependent variable was the proportion of gamble trials**,** reflecting how often participants chose to gamble under each trial condition.
5. The experimental hypothesis predicted that participants would be more likely to gamble when the potential loss was small or when the potential gain was large. Conversely, participants were expected to avoid gambling when potential losses were substantial or when the risk of losing was higher.
6. My data partially supported the experimental hypothesis. I was more likely to gamble in both the less risky and more risky conditions when a large loss was at stake, which may reflect overconfidence or insensitivity to loss magnitude. However, my results did not align with the hypothesis regarding large gains. Although I was expected to gamble more under those conditions, I chose to gamble at the same rate (0.750) in both small and large gain scenarios, regardless of risk level. These patterns suggest individual differences or alternative influences on my decision-making that may not be captured by the experimental hypothesis.
7. One limitation of the experiment is that it used artificial monetary stakes, which may not accurately simulate real-world risk-taking behavior. Participants are likely to behave differently when real money is involved. Additionally, across a large sample (N = 70,000), the effect has not consistently replicated, suggesting that the observed differences in risk behavior across gain/loss conditions may not be as robust as originally hypothesized. Another methodological concern is the potential lack of emotional engagement; because the stakes were imaginary, participants may have made choices without fully experiencing the anxiety or excitement that often accompanies real financial decisions.

8. Future directions could involve incorporating real or incentivized monetary rewards to better approximate actual decision-making under risk. Alternatively, the task could be gamified to increase engagement and make the gain/loss contingencies more salient. For example, participants could wager points in a competitive format or place bets on real or simulated sports events (e.g., horse races or fantasy football scenarios). Another avenue for future research could involve observational studies of casino gamblers to determine whether similar risk-taking patterns emerge in high-stakes, real-world settings. These enhancements could clarify whether the findings generalize beyond laboratory conditions.

Grading Lab Reports: How to Earn a Perfect Grade by Avoiding Common Mistakes

Points will be deducted for the following errors:

5-point deduction per error:

- Incomplete sentences in responses.
- Improper numbering of responses.
- Excessive spelling mistakes or poor grammar.

5–10-point deduction per error:

- Inclusion of lab report instructions in the submission.
- Missing required information or failure to provide an explanation for any missing content.
- Failure to discuss whether your data aligns with the experimental hypothesis in item #6.
- Insufficient elaboration on responses for items #7 and/or #8 (avoid one-sentence responses).

10-point deduction per error:

- Failure to provide a unique critique in item #7.
- Failure to provide a unique suggestion for future directions in item #8.

30-point deduction:

- Submitting your assignment up to 7 days late.

Grade of Zero:

- Assignments submitted more than 7 days late will not be accepted and will receive a grade of zero.

***Schedule* (Classes begin on Monday, August 25):**

Readings for Exam 1, Goldberg, *Cognitive Psychology*

- Chapter 1: Introduction to Cognitive Psychology
- Chapter 2: Cognitive Neuroscience

- Chapter 3: Perception
- Chapter 4: Attention

CogLabs for Exam 1. Submit before midnight on the due dates below.

1. Visual Search (due date; 8/29)

Extra Credit Opportunities (Introduce Yourself; BB/Syllabus Quiz) expire at midnight on 8/29!

Labor Day Recess, August 31-September 1

2. Brain Asymmetry (due Friday, 9/5)
3. Change Detection (due Friday, 9/12)
4. Modality Effect (due Friday, 9/19)
5. Stroop Effect (due Friday, 9/26)

Exam 1 is scheduled for Friday, September 26.

Readings for Exam 2, Goldberg, *Cognitive Psychology*

- Chapter 5: Short-term and Working Memory
- Chapter 6: Long-term Memory: Structure
- Chapter 7: LTM: Encoding, Retrieval, and Consolidation
- Chapter 8: Everyday Memory and Memory Errors

CogLabs for Exam 2. Submit before midnight on the due dates below.

1. Memory Span (due Friday, 10/3)
2. Operation Span (due Friday, 10/10)
3. Levels of Processing (due Friday, 10/17)

Fall Break, October 19-21

4. Encoding Specificity (due Friday, 10/24)
5. False Memory (due Friday, 10/31)

Exam 2 is scheduled for Friday, October 31.

Readings for Exam 3, Goldberg, *Cognitive Psychology*

- Chapter 9: Conceptual Knowledge
- Chapter 10: Visual Imagery
- Chapter 11: Language
- Chapter 12: Problem Solving & Creativity

CogLabs for Exam 3. Submit before midnight on the due dates below.

1. Lexical Decision (due Friday, 11/7)
2. Implicit Association Test at Project Implicit (not part of CogLab; due Friday, 11/14)

3. Mental Rotation (due Friday, 11/21; Virtual session scheduled in place of in-person class (Psychonomic Society Conference, Denver, Colorado)

Thanksgiving Recess, November 26-30

4. Word Superiority (due Friday, 12/5)
5. Monty Hall (due Friday, 12/5)

FINAL EXAM: Monday-Wednesday, December 8-10