

PSY 365 Cognition Syllabus and Lab Manual

Monday, Wednesday, and Friday
Section 2, 12-12:50 PM, rm. 1310 Au Sable Hall
Section 1, 2-2:50 PM, rm. 209A Holton-Hooker

Instructor: Jennifer Gross, Ph.D.

How to reach me:

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Office Hours: 1-1:45 PM MWF; and other times by appointment. Students with appointments have priority over walk-ins.

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Course Description:

The course Cognition **scientifically** investigates the operations of the human **mind**.

The use of the word **scientifically** may conjure up images of white lab coats and antiseptic laboratory equipment. However, science is not defined by clothing, equipment, or subject matter. Science is a method of discovery based on systematic, empirical observation, in contrast to mere intuition or speculation. Because our course is rooted in the scientific tradition, you are expected to participate in weekly, hands-on replications of foundational experiments in Cognitive Psychology. In these weekly laboratory exercises, you will take the roles of the naïve participant, the methodical researcher, and the skeptical peer reviewer.

Although the field of cognitive psychology is relatively young, the **mind** has intrigued humanity for thousands of years. Perhaps you, like ancient philosophers, have wondered why people think the way that they think or believe what they believe. In contrast to a philosopher's reliance on reasoned argument, cognitive psychologists scientifically explore the mental underpinnings driving thoughts and behaviors. The concepts (e.g., memory, language, attention) in cognitive psychology are inherently abstract and intangible. By using operational definitions (i.e., clear and concise descriptions of how variables are measured or observed), these mentalistic concepts become concrete, accessible, and open to scientific study. Consider some of the real-world questions that face cognitive psychologists. Should we drive while talking on a hands-free cell phone? How can students improve their memory for exam material? Is there such a thing as subliminal communication embedded in advertising? Are there gender differences in mental aptitude? How can we improve the accuracy of eyewitness testimony? Insights into basic cognitive processes can help clarify the breakdowns in memory that are commonplace (failure to remember to stop at the grocery store) as well as pathological. For example, how are the minds of dementia sufferers or amnesiacs different than those of the non-impaired? Indeed, cognitive psychology is relevant to every waking moment of our lives.

The operations of the mind are ubiquitous and mostly go unnoticed. By taking this course, your quest is to appreciate the marvelous feats and foibles that your mind performs daily. Our study begins with what can be loosely described as lower-level thought processes (e.g., visual perception) and proceeds to higher-level thought processes (e.g., decision-making, language). However, as we closely examine our cognitive abilities, we will discover that even the simplest behavior (e.g., recognizing a dog) is controlled by a multitude of mental processes. Are you ready to scientifically explore your mind?

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

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

GVSU Saves CogLab Software License*:

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

*If you want to obtain either the eBook/CogLab on your own, you may opt-out by **Friday, January 19th**, and your student account will be refunded.

Course Grade Formula:

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

Exam #1	20%
Exam #2	20%
Exam #3	20%
15 Laboratory Reports	40%

Forms of Evaluation:

- 1. Exams:** To formally 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", so you can 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 covered in the lecture. While taking the exam, you may pause and when ready resume taking the exam during its window of availability. Be careful—only one question will appear at a time on your screen, and you will be unable to return to previously answered questions. Your score (total number correct) will automatically be furnished upon completion. A curved grade will be computed after the exam closes. See **Weekly Schedule** for tentative exam dates.
- 2. Laboratory Participation and Reports:** The primary goal of the laboratory component is to foster your understanding of the scientific process in Psychology. Outside of class time, you will participate in web-based, experimental investigations of classic experiments in Cognitive Science. You may complete these weekly experiments by using the GVSU computer labs or your own computer. Take time to read the background material for each lab at the host site. For all assigned experiments, you are expected to understand the theoretical underpinnings motivating the investigation; the procedures and methods of investigation, including the independent and dependent variables; the predicted experimental outcome (i.e., hypothesis); the results of the experiment expressed in statistics and graphs; potential limitations of the investigation; and how each experiment is related to material covered in class and the assigned readings. As a culmination of this scientific training, you are expected to prepare 15 laboratory reports by their due dates in the **Schedule**. For helpful guidance, please see the **Lab Report Format, Grading Lab Reports**, and **Sample Lab Report**.

Lab Report Format: Laboratory reports should be typed and provide the required 8 pieces of content using complete sentences. Do **not** include the instructions in your lab report. Instead, you

may rewrite the instructions as part of your response. Write clearly and concisely. Check your grammar and spelling. Number your responses from 1-8. Each lab requires a unique critique (#7) and a unique suggestion for future direction (#8). Avoid a one-sentence response for #7 and #8. I recommend preparing your report in Word or another word-processing program. Submit complete lab reports (not links) by their due dates to receive full credit. No email submissions will be accepted. Late submissions up to 7 days past the due date are accepted yet penalized (See **Grading Lab Reports**). No assignments will be accepted more than 7 days late and a grade of "0" will be issued. You are encouraged to keep copies of your laboratory reports for your records (backup proof of completion; helpful when preparing for an exam).

1. Using a complete sentence, state the **name of the lab** and the **date of your participation**.
2. State "My data are below" or something similar and paste your **summary data**. CogLab automatically provides your summary data upon completion of the experiment.
3. Identify and explain how the **independent and/or predictor variable(s)** were measured.
4. Identify and explain how the **dependent variable(s)** were measured.
5. State the experimental **hypothesis**.
6. Determine if your data are consistent with the **predicted outcomes**.
7. **Critique** the experiment. Offer potential, alternative explanations for the phenomenon observed that the researchers may have failed to consider. Consider the role of methodological limitations, variables not taken into consideration, or other weaknesses of the experiment. Be careful not to suggest the same "critique" for every lab.
8. Suggest **future directions**, such as how the experiment might be modified to improve the investigation. Future directions arise out of the research limitations identified for a specific lab and may include building on a finding; addressing a conceptual flaw in the design; or examining the theory in a new context, location, or culture. Be careful not to suggest the same "future direction" for every lab.

Grading Lab Reports: Earn a Perfect Grade on your Lab Reports by Avoiding Common Mistakes

A **5-point deduction** will be taken for each error:

- Incomplete sentences for responses.
- Improper numbering.
- Excessive spelling mistakes or improper grammar.

A **5–10-point deduction** will be taken for each error:

- Improper inclusion of the lab report instructions.
- Failure to provide all requested information or furnish an explanation for missing content.
- Failure to discuss whether your data agrees with the experimental hypothesis in #6.
- Failure to properly elaborate on your responses for #7 and/or #8. Avoid the 1-sentence response!

A **10-point deduction** will be taken for each error:

- Failure to provide a unique critique (#7).
- Failure to provide a unique future direction (#8).

A **30-point deduction** will be taken for submitting your assignment up to 7 days late.

A **Grade of Zero:** No assignments will be accepted more than 7 days late and a grade of zero will be issued.

Sample Lab Report:

1. The experiment was named Risky Decisions and was completed on 12/02/2023.
2. The summary data for the lab are below.
- 3.

Proportion of Gamble Trials

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

(If applicable, insert graph here)

3. The experiment had three independent variables. The first independent variable was if one's chances of winning were less risky or more risky (based on odds of winning). The second independent variable was whether the trial outcome would be a gain or loss of money. The third independent variable was a small gain or large gain in terms of the dollar amount on each trial.
4. The experiment had one dependent variable, which was the proportion of gambling trials that one engaged in for each trial.
5. The experimental hypothesis was that participants would engage in more risk-taking (e.g., gambling) when there is less to lose or there are large gains. Alternatively, participants are less likely to engage in risk-taking decisions when there is more to lose.
6. Some of my data was consistent with the experimental hypothesis. For example, I was more likely to gamble in the riskier condition and less risky condition if there was a large loss. However, my data was inconsistent with the experimental hypothesis when it came to large gains. According to the hypothesis, I should be more risk-adverse, or avoid risk-taking. Yet, I engaged in an equal proportion of gambling in the riskier condition when there was the possibility of a large gain.
7. One limitation of the study that CogLab mentioned is that the risky decision effect did not replicate the finding. Across 70,000 participants, they did not find the suspected differences between people avoiding risks for gains and people risk taking for losses. Another limitation is that this experiment involved make-believe money. The results of the experiment may be different if participants were playing for real money.
8. One way to improve the study (which Cog Lab already implemented) was to make this into a game. This made the loss vs. gains clearer to participants. The game format also made the experiment more engaging. For future directions, people could try this paradigm with a different format that involves gains vs. losses to determine if the results replicate. Another interesting paradigm would be to observe how casino players gamble. Do they show the same predicted findings or not?

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.

Schedule (Classes begin on Monday, January 8)

Readings for Exam 1, Goldberg, *Cognitive Psychology*

Putnam, A. L., Sungkhasettee, V. W., Roediger, H. L. (2016). Optimizing Learning in College: Tips From Cognitive Psychology. *Perspectives on Psychological Science*, 11(5), 652–660.

- 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 (recommended due date; 1/12, yet no later than 1/19)
2. Brain Asymmetry (due Friday, 1/19)
3. Modality Effect (due Friday, 1/26)
4. Change Detection (due Friday, 2/2)
5. Stroop Effect (due Friday, 2/9)

Exam 1 is scheduled to open on Friday, February 9. Closing date to be determined.

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, 2/16)
2. Operation Span (due Friday, 2/23)
3. Levels of Processing (due Friday, 3/1)
4. Encoding Specificity (due Friday, 3/15)
5. False Memory (due Friday, 3/22)

Exam 2 is scheduled to open on Friday, March 22. Closing date to be determined.

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, 3/29)
2. Implicit Association Test at Project Implicit (not part of CogLab; due Friday, 4/5)
3. Mental Rotation (due Friday, 4/12)
4. Monty Hall (due Friday, 4/19)
5. Risky Decisions (due Friday, 4/19)

FINAL EXAM

Monday, April 22 - Wednesday, April 24