

PSY 122: Science of Learning

Summer 2022

Lecture: Tuesdays and Thursdays from 1-4:30 P.M. Pacific Daylight time (PDT)

Two Optional discussion Sections:

Section A: Wednesdays from 10-11 A.M. PDT with Graduate TA Wei Dou

Section B: Wednesdays from 2-3 P.M. PDT with Graduate TA Vanessa Oviedo

Instructor: Professor Karen Arcos, Ph.D.

E-mail address: karcos1@ucsc.edu

Instructor Office Hours: Wednesdays from 12-1:30 P.M. PDT

Zoom link (used for all course-related meetings):

<https://ucsc.zoom.us/j/96499358361?pwd=LzhrSzYyYjFKSk1dXVksSW95MXBLUT09>

Meeting ID (used for all course-related meetings): 964 9935 8361

Passcode: Psyc122

One tap mobile: +16699006833,,96499358361#,,, *5727944# US (San Jose)

Graduate TA: Wei Dou

E-mail address: wdu@ucsc.edu

Graduate TA: Vanessa Oviedo

E-mail address: voviedo@ucsc.edu

TA office hours: Mondays from 12-1 PM PDT (Vanessa) and Wednesdays from 11-12 PDT (Wei)

Course Summary

Academic success often entails managing and mastering multiple courses covering a variety of topics, each with their own unique requirements. However, what study methods are effective versus ineffective, and why? For example, is learning based on the amount of time a student spends studying? Is highlighting an effective method of learning? Is reviewing notes or testing oneself better for studying? How will you know if a study tip you read on the internet will really help you learn? In this course, we are going to pose questions about studying and discuss the answers that have been uncovered through scientific research on human memory. The course has 3 primary objectives:

1. Students will be able to clearly articulate the principles of memory that guide effective methods of studying and the scientific evidence supporting those principles' effectiveness.
2. Students will be able to routinely apply these principles to their own studying.
3. Students will be able to design and critique scientific research about memory principles.

We will meet these objectives through lectures, readings, demonstrations, discussion, activities, and more. I hope that by the end of the course, you'll guide your own studying with scientific research on memory and that you will be able to help others do the same. If you ever have any questions about the nature of the class or your own participation, please do not hesitate to ask.

Required Materials

1. **Textbook:** Most readings will come from the following required textbook. Readings should be completed before class, unless otherwise noted.
A Guide to Effective Studying and Learning: Practical Strategies from the Science of Learning
Matthew Rhodes, Anne Cleary, and Edward DeLosh, 2019
1st Edition; ISBN: 9780190214470
2. **Course Website:** Materials related to the course can be found on [Canvas](#). These will include any additional readings, guided notes, class assignments, study questions, class-related announcements, and more. You will also be able to keep track of your grade on the course website.

Course Requirements

Your grade has many elements, giving you numerous opportunities to contribute to your score, summarized in the table below. Some of the assignments must be completed in class; others will be completed on your own outside of class. Below are details of each component of your grade.

Activity	Number of Assignments Per Quarter	Points Per Assignment	Total Points
In-Class Activities	8	25	100
Mastery Quizzes	2	50	100
Cumulative Mastery Quiz	1	100	100
Concept Summaries (AKA SEATED assignments)	4	50	200
Midterm	1	250	250
Final	1	250	250
Course Total			1000

- 1.) In-Class Graded Activities (10%; 100 points).** As we will learn in class, generating examples and explanations will deeply enhance your learning. In order to encourage you to engage in these kinds of activities regularly, we will have in-class activities (worksheets, discussions, etc.), worth 25 points each. I understand that it is not necessarily feasible to attend every class. Although there may be up to 8 in-class activities (but perhaps fewer than 8), only your 4 highest in-class activities will count towards your final grade. Therefore, no late or make-up in-class activities will be accepted. **Although no formal attendance policy exists, please attend every class to the best of your ability to ensure that you are present to complete at least 4 in-class graded activities.**
- 2.) Mastery Quizzes (20%; 200 points).** As we will learn in class, quizzes are not just for assessing your learning, but are actually one of the most powerful tools you have for enhancing your learning. Therefore, most weeks, you will complete a mastery quiz worth 50 points; a cumulative quiz worth 100 points will take place at the end of the course. All quizzes will be administered on Canvas and will be due by **5:00 p.m. on Mondays**. To get the most out of quizzing yourself, it is important that you can eventually correctly recall the key concepts from class. Therefore, we will use a mastery quiz model. What this means is that you will be able to take the multiple-choice quiz on Canvas whenever you would like and as many times as you would like during the week that the quiz is due. Only your highest score will count towards your final grade. Note that each time you take the quiz, the questions may change slightly. Given the course's pace and that you may complete the mastery quizzes as many times as you would like during the week that they are due, no late or make-up mastery quizzes will be accepted.
- 3.) Concept Summaries (20%; 200 points).** As we will learn in class, organization greatly enhances understanding and memory. The concept summaries are designed to help you organize your thinking around all of the content covered in the readings and lectures that week. They will be due by **5:00 p.m. on Monday** on Canvas each week. Although the format may change slightly week-to-week to best suit the content, you can anticipate short-answer questions, completing tables, etc. I understand that things in life may come up that prevent you from completing every concept summary on time. Therefore, you will have one opportunity to turn in a concept summary up to 72 hours late with no penalty. All other late concept summaries will be deducted 20 percentage points for each 24 hours they are late. Other than your one "free" late concept summary, no late concept summaries will be accepted after 72 hours.

- 4.) **Midterm Exam (25%; 250 points).** The mandatory short answer midterm exam will be administered on *Thursday, August 11th*. The midterm will be available on Canvas from 12 A.M.-11:59 P.M PDT. No late exams accepted. It will be cumulative, covering lectures on misconceptions, metacognition, elaboration, imagery and embodiment, and organization. The questions will be similar to the mastery quiz questions. You may join the Zoom meeting at the scheduled lecture time on August 11th from 1-4:30 P.M. PDT if you have questions.
- 5.) **Final Exam (25%; 250 points).** The mandatory short answer final exam will be administered on *Thursday, August 25th*. The midterm will be available on Canvas from 12 A.M.-11:59 P.M PDT. No late exams accepted. It will be cumulative, covering all material covered in the course. The questions will be similar to the mastery quiz questions. You may join the Zoom meeting at the scheduled lecture time on August 25th from 1-4:30 P.M. PDT if you have questions.
- **Make-up Exams:** You are expected to take all exams at the times listed in the Course Schedule. Please note these times and do not make any conflicting arrangements. **You must inform me as far in advance as possible that you will miss an exam.** For unanticipated absences associated with medical reasons or other crises, contact me prior to the exam if possible. If that is not possible, **contact me as soon as you can after the exam** (it should almost always be possible to contact me within one or two days). I also reserve the right to administer an alternative make-up exam. You may expect to receive a response from me 24 hours after emailing on weekdays and by 48 hours if emailing me on weekends.
 - **University Sponsored Events:** If you are representing the university in a university-sponsored event (see the general catalog for qualifying events) and your event falls on the day of the exam, you must provide me with *an official letter* from the individual in charge of the activity at least two weeks prior to the date of the event and make arrangements for the exam no later than two weeks before the exam date. Athletes should provide a schedule of their season at the start of the season.
 - **A Note on Exam Procedure:** You should arrive about 5-10 minutes before the start of an exam class period. No extra time will be provided to latecomers and no one will be permitted to start an exam after the first person has finished the exam. Cell phones must be turned off and stowed away during exams (a cell phone on a desk will be regarded as evidence of cheating).

Coursework Hours

Following UC Senate Regulation 760, students in a 5-credit course should complete 30 hours of work per week during a 5-week session. After the 6.5 hours spent in course meetings, and 1 hour spent in an optional discussion section per week, students should plan to spend 22 hours per week outside of class engaging with the course material and assignments. Here is an approximate breakdown of how that time will be spent:

- Reading assignments (5-10 hours)
- Mastery Quizzes (1-3 hours)
- Concept summaries (3 hours)
- Attending office hours, reviewing lectures, miscellaneous studying, etc. (4-6 hours)

Grades

Grades will be calculated by summing the scores for all graded course assignments, for a total of 1000 points available. The grading scale is as follows:

- **Assignment Grading:** You may ask to have an assignment regraded. However, the same assignment rubric will be used and your grade may be lower, not higher, upon regrading. The grade that you earn on the regrade is the one that will contribute to your course point total.
- **Dropping the Course:** According to the summer academic calendar website, the period to drop and have tuition reversed ends August 1st. Please check this date with the Registrar's office if you think you may want to drop this course. If you are enrolled and decide to drop the course, you must do so yourself (I do not automatically drop students on their behalf). Therefore, if you do not drop the course and never attend, you will remain on the class roster and receive an F for this course. Check with the registrar's office if you have questions about adding or dropping the course.

Grade	Points
A+	975 - 1000
A	925 - 974
A-	895-924
B+	875 - 894
B	825 - 874
B-	795-824
C+	775 - 794
C	695 - 774
D+	675 - 694
D	625 - 674
D-	595 - 624
F	0 - 594

Research Participation

The Psychology Department provides an opportunity for students in this course to gain extra credit by participating in psychology research projects (surveys or experiments) for up to **two hours**, or by completing an alternative assignment (see below).

Follow these easy steps to sign-up for research projects:

1. Go to the Sona website at <https://ucsc.sona-systems.com>
2. If you are enrolled in the class at the start of the quarter, then an account should already be created for you. To log in for the first time, click "Forgot Password?" to retrieve the pre-set password. For those who added the class late, or for some reason the system won't let you log in, you may need to click "Request Account." Only request a new account if the "Forgot Password" link isn't working.
3. **Always enter your UCSC email address.** You will receive your password via email.
4. Log in and follow the instructions to complete the Prescreening Questionnaire. Your responses on this questionnaire will determine your eligibility for different studies.

- **IMPORTANT:** You can earn research credits points by either participating in studies (in-lab experiments or online surveys) or writing papers (the alternative assignment). Studies are posted throughout the quarter. Plan ahead and complete them as soon as possible. Check online often for new studies. If you know you cannot make it, and if the time until the study is more than 24 hours, you can cancel on Sona. If you fail to show up for a study, or fail to cancel in time, you will be marked as having an "unexcused no-show." If you accumulate three unexcused no-shows, you will be prevented from signing up for more experiments. All participation must be completed by 5pm on the Friday of the last week of instruction (**Friday, August 26**).
- **What if you can't find studies?** Although some studies may be available right at the start of the quarter, enough may not be available for everyone. Please be patient, researchers will post new studies throughout the quarter. Usually, a big spike in hours happens during the last couple weeks. If you are concerned about the availability of hours, please don't email your instructors or TAs, instead email the pool administrator so that they can try to address the issue directly (ucscresearchpool@gmail.com). This is also the best email to use if other issues arise during the quarter. If you participated in a study but didn't receive credit two days after your scheduled participation time, please start by emailing the researchers directly. If the researchers don't

respond, email the pool administrator. Rest assured, however, that all pending timeslots will be given credit at the end of the quarter before a report is sent to your professor.

- **Alternative assignment:** If you prefer to not participate in research projects (or if you are under the age of 18) you may substitute with up to **two papers**, each critically evaluating a psychology research article. If doing the alternative written assignments, they must be submitted via canvas by the last day of instruction (Friday, August 26). If you have any questions or concerns please contact the research pool administrator at ucscresearchpool@gmail.com. Please note that plagiarized papers will result in a No Pass.

Each paper should be 1-2 pages (double spaced, 12-point, times new roman) and critically evaluate a psychology research article (addressing the questions shown below). You will need to find articles published between 2020 and 2022 in one of the following journals: (a) *Psychological Science*; (b) *Memory*; (c) *Memory and Cognition*.

1. What were the basic questions or hypotheses under investigation?
2. How did the researchers test their hypotheses?
3. What did the researchers find? How were these findings interpreted?
4. Are you convinced researchers addressed their question or hypothesis well? Why or why not? Explain.

Academic Dishonesty

Academic integrity is the cornerstone of a university education. Academic dishonesty diminishes the university as an institution and all members of the university community. It tarnishes the value of a UCSC degree. All members of the UCSC community have an explicit responsibility to foster an environment of trust, honesty, fairness, respect, and responsibility. All members of the university community are expected to present as their original work only that which is truly their own. All members of the community are expected to report observed instances of cheating, plagiarism, and other forms of academic dishonesty in order to ensure that scholarship's integrity is valued and preserved at UCSC.

In the event a student is found to violate the UCSC Academic Integrity policy, they may face academic sanctions that the instructor of record imposes. They may also face disciplinary sanctions imposed either by their college's provost or the Academic Tribunal convened to hear the case. Violating the Academic Integrity policy can result in dismissal from the university and a permanent notation on a student's transcript.

For the full policy and disciplinary procedures on academic dishonesty, students and instructors should refer to the [Academic Integrity page](#) at the Division of Undergraduate Education.

Distribution of Course Materials (Lecture Notes, Slides, Videos, Quizzes, etc.)

Students may be disciplined for selling, preparing, or distributing course lecture materials for any commercial purpose, whether or not they were the person taking the notes. The unauthorized sale of lecture notes and handouts, readers, quiz questions, or other course materials violates campus policies, state law, and may also constitute copyright infringement subject to legal action.

Disability Resource Center (DRC) Accommodations

UC Santa Cruz is committed to creating an academic environment that supports its diverse student body. If you are a student who requires disability accommodations to achieve equal access in this course, please email me your Accommodation Authorization Letter from the DRC, preferably within the first two weeks of the quarter. I would also like us to discuss ways we can ensure your full participation in the course. I encourage all students who may benefit from learning more about DRC services to contact DRC by phone at 831-459-2089 or by email at drc@ucsc.edu.

Title IX

The university has instituted a number of measures designed to protect its community from sex discrimination, sexual harassment, sexual violence, and other related prohibited conduct. [Information about the Title IX Office](#), the [online reporting link](#), applicable campus resources, reporting responsibilities, the [UC Policy on Sexual Violence and Sexual Harassment](#), and the UC Santa Cruz Procedures for Reporting and Responding to Reports of Sexual Violence and Sexual Harassment can be found at titleix.ucsc.edu.

The Title IX Office is actively responding to reports and requests for consultation. If you are not currently working with someone in the office and want to make a report/request a consult, you can expect the fastest response by using our [online reporting link](#). For more information please visit the [Title IX Operations under Covid-19](#) page.

Title IX prohibits gender discrimination, including sexual harassment, domestic and dating violence, sexual assault, and stalking. If you have experienced sexual harassment or sexual violence, you can receive confidential support and advocacy at the Campus Advocacy Resources & Education (CARE) Office by calling (831) 502-2273. In addition, Counseling & Psychological Services (CAPS) can provide confidential, counseling support, (831) 459-2628. You can also report gender discrimination directly to the University's Title IX Office, (831) 459-2462. Reports to law enforcement can be made to UCPD, (831) 459-2231 ext. 1. For emergencies call 911.

Basic Needs, Counseling, and Psychological Services

Any student experiencing difficulty affording or accessing nutritious food, or who does not have a safe, stable place to live, is urged to contact Slug Support at 831-459-4446 or [to email deanofstudents@ucsc.edu](mailto:to_email_deanofstudents@ucsc.edu). A comprehensive listing of food and housing resources on campus and in Santa Cruz is available at basicneeds.ucsc.edu.

If you are feeling highly stressed, anxious, or depressed, please avail yourself to help from Counseling and Psychological Services (CAPS) at the Student Health Center (831-459-2628). The [CAPS web page](#) also provides information about seeing a therapist and lists various crisis numbers: <http://caps.ucsc.edu>.

Psychology Department Undergraduate Advising

Declared Cognitive Science and Psychology majors are added to the psychugrads@ucsc.edu alias and will receive emails from Psychology Advising (psyadv@ucsc.edu). You should read these emails carefully, as they contain important information about enrollment, undergraduate opportunities, and other topics. If you are a declared Cognitive Science or Psychology major and have NOT received emails by the second week of the quarter, please email psyadv@ucsc.edu. In addition, you can find answers to common questions, an enrollment help page, and information on advising availability at <https://psychology.ucsc.edu/undergraduate/advising/index.html>. We also post many announcements from other campus departments and organizations on our Facebook page, which serves as a virtual bulletin board: <https://www.facebook.com/UCSCPsychologyDepartment>.

Final Note

The Science of Learning is my favorite topic to both research and teach. I hope that all of you will enjoy this class. I am optimistic that it can enhance your ability to learn in this course, your other courses, and throughout your entire life. Although I schedule specific office hours, my door is always open, so please feel free to come by with questions about the class whenever you need to. I am here to do whatever I can to help you learn, understand, and apply this material. In addition, any constructive feedback you can give me about the class is truly appreciated.

CLASS SCHEDULE

Below is a tentative schedule of topics for the course. I reserve the right to change the content and order of class topics to respond to the needs of the class. **As a reminder, please attend every class. A small activity will happen nearly every lecture.**

Date	Week	Topic	Reading Assignments	Assignment Due (Monday at 5:00 pm on Canvas)
Jul 26	1	Intro to the Course & Common Misconceptions	Chapter 1	
Jul 28	1	Metacognition, Self-Regulated Learning, Cues & Forgetting	Chapters 4 & 10	
Aug 2	2	Verbal Elaboration, Imagery and embodiment	Chapter 5; Cambridge Handbook: Chapter 21	Mastery Quiz 1; Concept Summary 1
Aug 4	2	Organization & Prior Knowledge	Chapters 6	
Aug 9	3	Spacing & Interleaving	Chapter 7-8	Mastery Quiz 2; Concept Summary 2
Aug 11	3	Midterm Exam		
Aug 16	4	Testing & Error Correction	Chapter 9	Concept Summary 3
Aug 18	4	Critical Thinking, Analogy, Transfer	Chapter 11; Cambridge Handbook: Chapter 22	
Aug 23	5	Special Considerations in Math and Science	Cambridge Handbook: Chapter 4; Chapter 6	Cumulative Quiz; Concept Summary 4
Aug 25	5	Final Exam		