

Office: 329 Olin/Rice
Phone: (651) 696-6196
email: lea@macalester.edu
Drop-In Hours: TBD

Class meets on Monday, Wednesday, and Friday from 2:20 – 3:20 PM in OLRI 352

Required text:

Lea, R.B. and Cohen, B. H. (2025). Introductory Statistics for the Behavioral Sciences. (8th edition) NY: Wiley. (Available in the bookstore on 9/24/2025)

Preceptors:

Shurui Zhang <szhang4@macalester.edu>
Jack Dong <qdong@macalester.edu>
Chris-Zephyr Mango <cmango@macalester.edu>

Course Description:

This course is the first in a two-semester sequence in the general research methods and statistical procedures of psychology. It examines how psychologists ask and answer research questions. This course covers the principles of sound and ethical research design, the statistical techniques appropriate for analyzing the data collected during these studies, and the types of inferences and conclusions that can and cannot be drawn from statistical analyses. In the laboratory portion of this course, students acquire a working knowledge of RStudio, a statistical data analysis package.

This is a quantitative course. If you have a math background, the course will be straightforward. If you do not have a math background, don't panic! Material will be introduced at an intuitive or conceptual level. Students who possess basic arithmetic skills (e.g., multiplication, division, square roots), who persevere, who complete all assignments, and who seek assistance when needed, usually are very successful in the course.

Course Meeting Times and Attendance:

Class meets Mondays, Wednesdays, and Fridays from 2:20 to 3:20. Students are also required to attend a weekly computer laboratory session. Although attendance will not be taken during class, you are expected to attend all classes (past experience has shown that students who miss classes struggle on exams). Lab attendance is all but mandatory. You are expected to be in the Psychology Computer Lab (Room 349) at the scheduled lab time. On Sunday afternoons (2:00-3:30, and 4:00-5:30) and evenings (6:30-8:00) there will be an optional Homework Help Session run by the preceptors in room 349 (the Psychology computer lab).

Course Requirements:

Grades for the course are based on the following course requirements: three exams during the semester, weekly problem sets, one research report, passing an RStudio proficiency exam, weekly labs, and a two-part cumulative final exam. Each requirement is described in detail below.

Exams.

During the Semester: Each of the three exams given during the semester will be non-cumulative. Each exam is divided into two parts: a closed-book conceptual part (no fancy formulas needed) and an “open notes” practical part. The conceptual part includes multiple choice questions, definitions, matching items, and short answer questions. This part of the exam does not include practical (i.e., computational) problems.

The practical part contains only computational (homework-like) problems; you will analyze various data sets using the statistical techniques you have learned in the course. For the practical part of the exam, you may use a single, 8½ X 11 sheet of paper on which can be written anything you wish (and which should definitely contain any formulas that you may need for the exam). If, during the exam, you believe that you are missing some formulas, you may buy them from me for 2 points per formula (i.e., you lose 2 points off your exam grade for each formula that I supply).

Final Exam: The cumulative final exam is also divided into two parts: an open-book, take-home, practical exam composed entirely of data sets to be statistically analyzed, and a closed-book, in-class, conceptual exam composed of short-answer questions, definitions, matching items, and multiple-choice questions. The take-home part of final exam, given out on the last day of class, is due in my office by 5 PM on Wednesday, December 17th, and counts for 15% of your total course grade. The conceptual final exam is given during the class’s assigned exam period, on Saturday, December 13th from 10:30 – 12:30, and counts for 15% of your total course grade.

RStudio Proficiency Exam: You are required to satisfactorily pass (i.e., receive at least 70 out of 100 points) an RStudio proficiency exam. On this exam you must demonstrate your ability to prepare data sets and carry out statistical analyses using RStudio. This exam is an open-book exam that you have 48 hours to complete. Make-ups for this exam will be given. However, if you have not satisfactorily passed the exam by Wednesday, December 17th at 5 PM, 10 points will be deducted from your final grade point total. The exam will be available starting Friday, December 5th.

With the exception of the RStudio proficiency exam, makeups are not given for unexcused absences from exams (except under truly extraordinary circumstances). If you have a problem, contact me before the exam. A student who is not present at an exam receives no credit for that exam (i.e., a numerical grade of zero).

Problem Sets. Most weeks you will be required to complete a problem set. You will be asked to solve a number of problems using RStudio, as well as by hand. Completed problem sets are ***due at the start of class on Monday***, unless otherwise announced. The grade you receive on them will depend upon their correctness, completeness, and whether they were turned in on-time. Problem sets turned in late will receive no credit, though they will be graded (i.e., you will get feedback).

Each of the ten problem sets is worth 1 point toward your final grade point total. Thus, the ten problem sets count for 10% of your final course grade. Complete and correct problem sets turned in on the original due date will receive full credit (1.0 point).

A complete and correct problem set is one in which all assigned problems have been correctly solved ***with all your work/computations for that problem shown***. You will lose points

if your problem set is incomplete (i.e., is missing an assigned problem), contains an incorrect problem solution, or does not show your work. Problem sets are due on Mondays ***at the beginning of class*** (NB: if you have not completed your homework by the beginning of class, come to class and turn in what you have; do not skip class.) Graded problem sets will be returned to you on Fridays. Each problem set will receive a grade of check, check +, or check -. To earn a check +, a student must have a) submitted the homework on time; b) attempted every assigned problem; and c) successfully answered each question showing the appropriate amount of work (a few very small errors are okay); A check indicates that a student has satisfied criteria a) and b), but that one or more substantial or conceptual errors were made. A check - indicates that criteria a) has been met, but that either not all problems were attempted, or there were significant errors of understanding. These marks are intended to provide general feedback about your performance on the problem set where check + means “excellent – no major problems found”; a check means “good try, but you should be aware that you may not understand the material as well as you thought”; and check - should be understood as a red flag indicating that you should pay more attention to either your effort to complete the data set, or to your understanding of the material (or both). Your two lowest homework grades will be dropped before your final homework grade is computed.

Laboratory Activities. Each week you will spend approximately an hour and a half in lab performing various activities. For the most part, computer activities involve interacting with RStudio, a statistical software package. When you have completed the Lab Handout for that week, you will fill the remaining lab time by doing your RStudio homework (usually due the following Monday). It is important that you bring your textbook to lab so you can do your homework. Other lab time will be spent discussing and/or working on your Research Projects.

Makeups will only be allowed for excused absences, and must be completed within two weeks of the original lab date. Lab attendance is worth 5 points.

Research Report. The research report will be a write-up of an experiment that will be conducted during lab. The experiment will reproduce the experimental framework of a classic eye-tracking experiment. You will receive more detailed information about the write-up for this research report in a separate handout. The Research Report counts for 15% of your total course grade.

Sunday Help Sessions

On Sunday afternoons (2:00-3:30, and 4:00-5:30) and evenings (6:30-8:00) in room 349 the class preceptors will be available to answer questions about the homework problems. The purpose of these sessions is to answer specific questions about problems that you are having difficulty solving. Do not simply ask the preceptor to do the problems for you--this will not help you learn the material or prepare for the exams. Try to do the problems yourself before the session or during the session; then, if you get stuck or do not get the correct answer, ask for help. It is highly recommended that students who find particular topics difficult, who have difficulty keeping current with the reading/homework assignments, and/or who desire extra support, attend the help sessions. In the past, some students have chosen to do their homework during the help sessions, while other students only come to the help sessions when they have a specific problem. You should use the sessions so that they best meet your needs.

Composition of Course Grade

Exam 1	10 points
Exam 2	15 points
Exam 3	15 points
Take-home Final Exam	15 points
In-class Final Exam	15 points
Problem Sets	10 points
Participation in class and lab	5 points
Lab paper	15 points
TOTAL	100 points

Please note that there are no make-up exams in this course. You are responsible for being appropriately prepared for each exam at the time that it is given.

RStudio Problem Sets

For the RStudio problems, turn in a knitted PDF copy of your markdown file with annotations of the analysis (the results, or the graph). Make sure you have annotated the file sufficiently for us to determine whether you have interpreted the output correctly (you will lose points if you do not annotate your RStudio results sufficiently). Computer exercises may be submitted either by handing in a printed copy of your work at the beginning of class on Mondays, or by submitting the PDF via the appropriate portal on Moodle by classtime.

Grading

Grades will be assigned based on the percentage of available points:

92-100 %	90-91%	88-89%	82-87%	80-81%	78-79%
A	A-	B+	B	B-	C+
72-77%	70-71%	68-79%	62-67%	60-61%	<60%
C	C-	D+	D	D-	NC

Academic integrity

You are expected to meet the highest standards of academic integrity and honesty, which includes submitting your own original work and properly citing any other work (ideas/quotes) that you have incorporated into your work. See Macalester's detailed definitions and policies concerning forgery, cheating, and plagiarism:

<https://www.macalester.edu/academicprograms/academicpolicies/academicintegrity/>. If you have any uncertainties about academic honesty/dishonesty as it might relate to your work in the course, please talk with me. Cases of suspected academic dishonesty will be reported to the Director of Academic Programs.

All exams are to be your own work regardless of whether they are open-book, closed-book, take-home, or in-class. You may not collaborate with any other individual on any exam and you may only use those materials (notes, tables, books) as explicitly stated on each exam booklet or in the syllabus.

You may (and should) work on the problem sets with other students. However, each student must turn in their own, hand-written, completed problem sets (i.e., machine generated

copies of problem solutions will not be accepted, except for computer printouts of computer assignments). If you do work on the problem sets with other individuals, make sure that you understand the solutions to all the problems and that you can solve them by yourself (i.e., dividing up the problems will put you at a *serious disadvantage* on the exams).

Accommodations

I am committed to supporting the learning of all students. If you are encountering barriers to your learning that I can mitigate, please bring them to my attention. If you think you need accommodations based on the impact of a disability, please contact Disability Services (disabilityresources@macalester.edu, 651-696-6748) early in the semester to schedule an accommodations meeting. Further information about disability services and accommodations can be found at: <http://www.macalester.edu/studentaffairs/disabilityservices>

Artificial Intelligence (AI) Use Policy¹

Using AI can impede your learning. The assignments in this class challenge you to develop creativity, critical-thinking, and problem-solving skills that AI does not have. Using AI technology could limit your capacity to do this type of work, and as the instructor, I urge you not to miss out on the educational opportunities that this course will provide. As is the case for all courses at Macalester College, work submitted by you for this class should reflect both your own ideas and your own language and you should properly cite any resources you have consulted. If you have any questions about citation or about what constitutes academic honesty in this course or at Macalester College in general, please feel free to raise these questions in class and/or contact me to discuss your concerns.

Health and Wellness at Macalester

I strongly encourage you to make your well-being a priority. Investing time in thinking well about yourself will help you engage more fully in your academic experience. Remember that beyond being a student, you are a human being with your own experiences, thoughts, emotions, and identities. It is important to acknowledge any stressors you may be facing; these can be emotional, physical, cultural, financial, etc., and can affect your academic experience. I encourage you to remember that you have a body with needs. It is important to eat when you are hungry, drink water, use the restroom, and step out of (or away from) class if you are upset or need some air. Please do what is necessary so long as it does not interfere with your or others' ability to be present in the course. Outside of the classroom, strategies to support your well-being include eating and sleeping well, moving your body, and connecting with others. If you are having difficulties, please don't hesitate to contact me and/or find support from other resources, including those offered by the Hamre Center (see resources listed below).

Support for Mental Health

In cases of life-threatening emergency, call 911.

On-Campus Resources

Laurie Hamre Center for Health & Wellness

Leonard Center Room 53, 651-696-6275 (call to make an appointment). Follow *macalesterhwc* on Instagram. www.macalester.edu/healthandwellness/

- Medical Services

¹ This statement was adapted from Macalester College's AI Literacy and Critical Thinking web resource.

- There is no charge for an office visit to see a provider for most appointments
- Medical providers can talk to you about your mental health.
- Counseling Services
 - Health & Wellness counselors provide short-term counseling to students.
 - Drop-in counseling sessions are available each day; first-come, first-served basis.
 - Counseling staff offers multiple groups each semester. Check Hamre Center website for more information on specific groups being offered.
 - 24 Hour Urgent Phone Counseling – PRESS 2
 - To speak to a mental health counselor at any time you can schedule an appointment
 - By scheduling an [appointment](#) or calling 651-696-6275, then press “2” to be connected to ProtoCall, a free phone counseling service that Macalester provides for students available 24/7.
- Health Promotion
 - Provides a variety of resources and events, including free movement classes, tea, sleep masks, earplugs, and sexual health resources. Visit the HWC website, visit the Wellness Lounge in Leonard Center room 55 (across from Studio 2) for resources.

Resident Advisor (RA) and Resident Hall Director (RHD)

- Both RAs and RHDs can serve as a first point of contact and are able to connect you to resources during mental health crises.

Other Support Offices

- Center for Religious and Spiritual Life, (651-696-6298), Weyerhaeuser Chapel
- Office of Student Affairs (651-696-6220), Weyerhaeuser 119

Urgent and Off-Campus Resources

[\(www.macalester.edu/healthandwellness/afterhours\)](http://www.macalester.edu/healthandwellness/afterhours)

Public Safety

- Call 651-696-6555 in the case of any emergency to reach Macalester Security. They will connect you with other campus response personnel.
- On Friday and Saturday nights (9 pm – 2 am), student EMTs are on call, and will respond to health-related emergencies when Security is called

Press 2 – Phone Mental Health Counseling (see description above)

651-696-6275, menu option 2

Crisis Text Line

- Minnesota's suicide prevention and mental health crisis texting services are available 24 hours a day, seven days a week. Text MN to 741741 to be connected to Crisis Text Line.

Transgender Suicide Hotline

- 877-565-8860

Urgent Care for Adult Mental Health

402 University Ave E.
St. Paul, MN 55130
651-266-7900 (24/7 phone support; walk-ins M-F 8am - 5:30pm)

Regions Hospital (Emergency Room)

640 Jackson St
St. Paul, MN 55101
651-254-3456

Transportation

If you have an urgent health need and do not have transportation to get to a clinic or hospital, Hamre Center staff, Residential Life staff, and other campus response individuals can arrange for a ride share (Uber) to and from the clinic/hospital. There is no charge for the ride.

Overview of Class Topics, Labs, and Assignments

9/3/2025 Version

Date	Class Topic	Lab Activities	Assignments Due
1 st Week (9/3 – 9//5)	Introduction to the course Descriptive Statistics Chapter 1	No Lab	Mon. 9/8 No Homework due
2 nd Week (9/8 - 9/12)	Scales of Measurement Measures of Central Tendency Chapters 2 (pp. 26-35; 39-47) and 3	RStudio Lab 1: RStudio Basics Creating and editing data files	Mon. 9/15 Chapter 1: EX: 1; 2a-b; 3a-b; TQ: 1-8. Chapter 2: TQ: 2-5. Chapter 3: EX: 1,6,9. TQ: 1-8.
3 rd Week (9/15 - 9/19)	Measures of dispersion and z-scores Chapter 4	RStudio Lab 1 (continued): Graphing and descriptive statistics; Manipulating and transforming data	Mon. 9/22 Chapter 1: CE 4,5 Chapter 3: CE: 1,5
4 th Week (9/22 – 9/26)	The Normal Distribution and the Philosophy of Statistical Inference Chapter 5	Eye-Tracking Training: Session 1	Mon. 9/29 Chapter 4: EX: 1,3,7-9,12. TQ: 1-8.
5 th Week (9/29 - 10/3)	Statistical Inference. Chapter 5	Eye-Tracking Training: Session 2	Mon. 10/6 Chapter 5: EX: 1-5. TQ: 1-5, 7.
6 th Week (10/6- 10/10)	Statistical Inference, Single-Samples Chapter 6	TBD	Prepare for Exam 1
7 th Week (10/13 - 10/15)	<u>Exam 1 on Monday, 10/13</u> Statistical Inference, Two-Samples Chapter 7	Fall Break!	Wed. 10/22 Chapter 6: EX: 1-4. TQ: 1-5.
8 th Week (10/20- 10/24)	Independent-samples research designs	TBD	
9 th Week (10/27 - 10/31)	Repeated/Matched designs Repeated Measures t-test Correlational research designs Chapter 9 (skip pp. 239-242)	RStudio Lab 2: t-tests	Mon. 11/3 Chapter 7: EX: 1,4,5,7-9. TQ: 1-6. CE:1-6 Chapter 6: CE: 1-3
10 th Week (11/3- 11/7)	Correlation	Writing in APA style Analyze Eye-tracking data	Prepare for Exam 2
11 th Week (11/10 - 11/14)	<u>Exam 2 Monday 11/10</u> Chapter 10 (skip pp. 263-272) Prediction and Linear Regression Experimental & Correlational Designs	RStudio Lab 3: Correlation & scatter plots	Mon. 11/17 Chapter 9: 1,2,4, TQ: 1-8 CE: 1-4, 6
12 th Week (11/17 -11/21)	One-Way ANOVA Chapter 12 (skip pp. 331-338)	RStudio Lab 4: Regression	Mon. 11/24 Chapter 10: EX: 1, 2. TQ: 1-2
13 th Week (11/24)	More ANOVA Multiple Comparisons	Thanksgiving!	Wed. 12/3 Chapter 10: CE:1-2. Chapter 12: EX: 1a-c, 2-3 (no eta squared or omega squared) TQ: 1-2 Lab Report Due Friday, 12/5
14 th Week (12/1 - 12/5)	Chapter 13 Take-Home Final Available Statistical Interactions	RStudio Labs 5: ANOVA & Multiple Comparisons	Mon. 12/8 Chapter 12: CE: 1-3. Interactions Homework Handout
15 th Week (12/8 - 12/10)	Review <u>Exam 3 on Wed 12/10</u>	Review	
	Conceptual Final: Sat.12/13 10:30-12:30pm	Take Home Final: due Wed 12/17 by 5pm	R Proficiency Exam: passed by Wed 12/17 5pm