Math 32: Probability and Statistics
Sections 01 and 10

Instructor: Derek Sollberger (dsollberger@ucmerced.edu)
Teaching Assistants:

- Li-Hsuan Huang (lhuang33@ucmerced.edu)
- Natalie Meacham (nmeacham@ucmerced.edu)
- Julio Zepeda (jzepeda31@ucmerced.edu)

Discussion Sections					
Day	**Time**	**Room**	**Section**	**TA**	**E-Mail**
Mon	1130 AM to 120 PM	COB 282	02D	Julio Zepeda	jzepeda31@ucmerced.edu
Mon	1130 AM to 120 PM	ADMIN 360	13D	Li-Hsuan Huang	lhuang33@ucmerced.edu
Mon	130 PM to 320 PM	COB 282	03D	Li-Hsuan Huang	lhuang33@ucmerced.edu
Mon	130 PM to 320 PM	ADMIN 364	12D	Natalie Meacham	nmeacham@ucmerced.edu
Mon	330 PM to 520 PM	COB 282	04D	Li-Hsuan Huang	lhuang33@ucmerced.edu
Mon	530 PM to 720 PM	ADMIN 360	11D	Li-Hsuan Huang	lhuang33@ucmerced.edu
Wed	1130 AM to 120 PM	ADMIN 360	05D	Julio Zepeda	jzepeda@ucmerced.edu
Fri	730 AM to 920 AM	ADMIN 250	14D	Natalie Meacham	nmeacham@ucmerced.edu

Office Hours				
Day	**Time**	**Instructor**	**Place**	**E-Mail**
Mon	10 AM to 12 noon	Natalie	TBD	nmeacham@ucmerced.edu
Wed	130 PM to 320 PM	Julio	Zoom	jzepeda@ucmerced.edu
Wed	200 PM to 300 PM	Li	Zoom	lhuang33@ucmerced.edu
Wed	400 PM to 500 PM	Li	Zoom	lhuang33@ucmerced.edu
Thu	1215 PM to 215 PM	Li	Zoom	lhuang33@ucmerced.edu

Course Description: Concepts of probability and statistics. Conditional probability, independence, random variables, distribution functions, descriptive statistics, transformations, sampling errors, confidence intervals, least squares and maximum likelihood. Exploratory data analysis and interactive computing.

Course Learning Outcomes: Upon completing Math 32, students should be able to:

1. Develop probabilistic models of random phenomena.
2. Infer statistical models from real data.
3. Apply mathematical methods to probabilistic/statistical models to (i) make predictions and (ii) quantify the uncertainty in these predictions.
4. Write and run "simple" R programs for the purposes of data analysis, modeling, and visualization.

Program Learning Outcomes Math 32 meets the following PLOs:

1.
2. An ability to develop and critique hypotheses and to design experiments, models, and/or calculations to address these hypotheses.
3. The ability to use appropriate instrumentation and computational tools to collect, analyze, and interpret data.
4. The ability to read, evaluate, interpret, and apply numerical and general scientific information.
5.
6. An ability to communicate biological science topics in written, oral, and visual formats.
7. An understanding of the relationship of biological sciences to society.

Assessment The course grades will be calculated by the following weights:

- Discussion section participation (10%, two days dropped)
- Before-lecture assignments (5%, lowest score dropped)
- Computer programming assignments (25%, lowest score dropped)
- Written assignments (25%, lowest score dropped)
- Surveys (5%, lowest score dropped)
- Exam 1 (10%, September 30)
- Exam 2 (10%, November 18)
- Final Exam (10%, December 16)

The course will start with a standard, grading scale ("A-/A/A+" 90%-100%, "B-/B/B+" 80%-89%, "C-/C/C+" 70%-79%, "D-/D/D+" 60%-69%). However, the teacher reserves the ability to "curve" the grading partition to reflect the difficulty of the course.

Important Dates:

- August 25 to 31: may add course online
- September 1 to 15: may add course with instructor permission
- September 6: Labor Day holiday
- August 15 to September 15: may drop course online
- September 30: Exam 1
- November 11: Veteran's Day holiday
- November 18: Exam 2
- November 24 to 26: Thanksgiving break
- December 16: Final Exam

Textbook:

Title: A Modern Introduction to Probability and Statistics
Authors: F.M. Dekking, C. Kraaikamp, H.P. Lopuhaä, and L.E. Meester

Class policies:

1. Health precautions: Conducting scholarly work under (post-)pandemic conditions simply extend values long established in higher education and reflected in UC Merced's Principles of Community. In enrolling at UCM and in this course, we will observe the following:

   - Appreciate and support the physical and psychological nuances of returning to an in-person classroom.
   - Wear a face covering—and always wear it effectively.
   - Keep informed on current campus information and maintain a consistent practice
   - If symptomatic, quarantining is expected along with notification to the Covid Response Center `https://doyourpart.ucmerced.edu/crc` for tracking and support

   As a reminder, the above expectations are consistent with our campus' Code of Student Conduct, which emphasizes that a productive and safe campus involves honesty, fairness, and respect. Circumstances and guidelines may change, and we will discuss important updates to affirm any updates or adjustments to classroom plans. This transition is new for all of us, and we are in this together as a classroom community. If you have questions, you are encouraged to stay in touch with me and/or UCM's Campus Ready COVID-19 site is an ongoing resource: `https://doyourpart.ucmerced.edu/crc`.

2. Lecture sections: Please keep extra noise to a minimum. Cell phones may be used as long as they are on silent or vibrate.

3. Discussion sections will be held for 2 hours each week. Students will develop problem-solving skills through group work on the before lecture, computer programming, and written assignments.

4. Exams: There will be two midterms and a final exam on the dates listed. Make-up exams are not automatically administered. If you are sick during a unit exam, please bring a note from your doctor verifying your illness. Your course grade will then be determined by the rest of your course work. Please bring your student ID to each exam. A special needs room for people with documented disabilities will be provided for each exam.

5. Computers: UC Merced students are strongly encouraged to have a laptop computer. Recommended minimum laptop specifications can be found at: `https://it.ucmerced.edu/student-laptop-recommendat` (Note: Chromebooks are not recommended.) Additional financial aid funds may be available to assist students with the cost of purchasing a laptop. Students may request a Cost of Attendance Adjustment for a one-time $1,200 computer purchase. More information about Cost of Attendance Adjustment can be found at: `https://financialaid.ucmerced.edu/coa-adjustment`. Information about open-access computer labs is at `https://it.ucmerced.edu/computer_labs`

6. Calculators: You may use a calculator (graphing or otherwise) or other computational tools (e.g. R, Mathematica, Maple, MATLAB, etc.) to aid in your studies. This course merits the use of a scientific calculator. Any calculator is allowed during quizzes and exams, except those that can ever access the internet.

7. Special Accommodations: University of California, Merced is committed to creating learning environments that are accessible to all. If you anticipate or experience physical or academic barriers based on a disability, please feel welcome to contact me privately so we can discuss options. In addition, please contact Student Accessibility Services (SAS) at (209) 228-6996 or access@ucmerced.edu as soon as possible to explore reasonable accommodations. All accommodations must have prior approval from Student Accessibility Services on the basis of appropriate documentation.

   If you anticipate or experience barriers due to pregnancy, temporary medical condition, or injury, please feel welcome to contact me so we can discuss options. You are encouraged to contact the Dean of Students for support and resources at (209) 228-3633 or https://studentaffairs.ucmerced.e

8. Academic Integrity: Academic integrity is the foundation of an academic community and without it none of the educational or research goals of the university can be achieved. All members of the community are responsible for its academic integrity. Existing policies forbid cheating on examinations, plagiarism and other forms of academic dishonesty. The UC Merced Academic Honesty Policy The UC Merced Academic Honesty Policy can be found on the Student Conduct website. Infractions against academic integrity will incur consequences such as an "F" on the assignment/exam and/or a report to the Academic Senate.

   Lecture and gateway courses have challenges with "homework help" sites like Chegg, Course Hero, and Koofers (to name a few) where course materials – including tests and assignments – are be posted by students as study guides and ultimately constitute cheating.[2]

Disclaimer: Due to the adaptive nature of the course and learning environment, this document is subject to change.

[1] `https://access.ucmerced.edu/faculty-staff/syllabus-statement`
[2] `http://studentconduct.ucmerced.edu/`

Inclusion and Diversity: I value all students regardless of their background, country of origin, race, religion, ethnicity, gender, sexual orientation, disability status, etc. and am committed to providing a climate of excellence and inclusiveness within all aspects of the course. If there are aspects of your culture or identity that you would like to share with me as they relate to your success in this class, I am happy to meet to discuss. Likewise, if you have any concerns in this area or facing any special issues or challenges, you are encouraged to discuss the matter with me (set up a meeting by e-mail) with an assurance of full confidentiality (only exception being mandatory reporting of academic integrity code violations or sexual harassment).[3]

Basic Needs: Any student who has difficulty affording groceries or accessing sufficient food to eat every day, or who lacks a safe and stable place to live, and believes this may affect their performance in the course, is urged to contact Vice Chancellor and Dean of Students Dr. Charles Nies (cnies@ucmerced.edu). **Emergency food, housing, and other basic assistance are available**. On campus resources include:

- With COVID 19, campus has a one-stop site featuring student resources at `https://success.ucmerced.edu/`
- For emergency funding and housing, information and appointment button is available for students at `https://studentaffairs.ucmerced.edu/dean-students/emergency-funds`
- The Basic Needs Office, Bavneet Kaur, Assistant Director of Basic Needs bkaur23@ucmerced.edu, or call (209) 631-3871.
- The Bobcat Pantry (contact Elizabeth Rodriguez Cruz, Basic Needs Food Distribution Coordinator at erodriguezcruz@ucmerced.edu) TC 131; 209-631-3871; Monday and Thursday: 1:30pm - 4:30pm) has free produce, shelf stable, and personal hygiene items available.
- UC Merced Food Pantry is a monthly food assistance program for all students, staff, and faculty in need. It offers participants with monthly food allotments (`https://studentlife.ucmerced.edu/content/uc-merced-food-pantry`).
- Counseling and Psychological Services (CAPS): CAPS offers a range of options for students, with group and individual sessions on managing stress and transitions. More details are available at `ttps://counseling.ucmerced.edu/services/counseling-services`

Furthermore, please notify us if you are comfortable in doing so. This will enable us to assist you with finding the resources you may need.

[3]This inclusion statement was written by chemistry professor Dr. Steve Zimmerman at the University of Illinois at Urbana-Champaign `https://mobile.twitter.com/steveczimmerman/status/1161019135251353606`

Pep Talk!

Learning R can be difficult at first—it is like learning a new language, just like Spanish, French, or Chinese. Hadley Wickham—the chief data scientist at RStudio and the author of some amazing R packages you will be using like `ggplot2`—made this wise obesrvation:

> It's easy when you start out programming to get really frustrated and think, "Oh it's me, I'm really stupid," or, "I'm not made out to program." But, that is absolutely not the case. Everyone gets frustrated. I still get frustrated occasionally when writing R code. It's just a natural part of programming. So, it happens to everyone and gets less and less over time. Don't blame yourself. Just take a break, do something fun, and then come back and try again later.

If you are finding yourself taking way too long hitting your head against a wall and not understanding, take a break, talk to classmates, ask questions ... e-mail me, etc.

I *promise* you can do this.[4]

[4]This pep talk comes from data science instructor Andrew Heiss at Georgia State University. Source: `https://mobile.twitter.com/andrewheiss/status/1165310391750189063`