# Probability & Statistics I

**STAT 2037 2025 Fall Semester section 001**

**Section 001 - MWF 11:15am-12:10pm, Old Chem 560**

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| **Instructor:** | Taige Wang, Associate Professor - Educator |
| Office: | French Hall West, 4306 |
| E-mail: | taige.wang@uc.edu |
| Office Hours: | MW 3:30pm-4:30pm, or by appointment (could be virtual in ZOOM) |

**Course Description:** An introduction to probability and statistics for students with a calculus background. We mainly cover most of materials in chapters 1–9. In detail, the course covers

- statistical concepts and terminologies
- introduction to probability rules
- random variables and their distributions
- joint random variables
- Central Limit Theorem
- Estimation, interval estimation
- Statistical hypotheses testings
- Comparing two populations for means and proportions

This course provides a foundation for the further study of statistics.

**Learning outcome:** At the end of the course, students will be able to

1. construct or select simple models of discrete and continuous random phenomena and use them to calculate probabilities, describe the distribution of possible outcomes, compute expected values, investigate the dependence of one quantity on another, and solve problems involving statistics derived from random samples;
2. estimate population parameters using the appropriate point or interval estimate, interpret the meaning of the result, and use the estimate to assess the validity of a claim about the parameter in question;
3. identify and conduct the appropriate hypothesis test concerning one or two unknown parameters, correctly supporting and interpreting the conclusion;
4. understand how to build models of random phenomena.

**Prerequisites:** Students are assumed to have background knowledge of basic concepts of calculus (derivatives and integrations).

**Textbook:** *Probability & Statistics with R for Engineers and Scientists*, 1st eds, by Akritas. This course covers selected sections from Chapters 1 to 9.

**Course Webpage**: All course-related information will be posted on UC Canvas, including course syllabus, homework assignments, and announcements. Visit the Canvas frequently.

**Midterm and Final Exam**:

Midterm Exam 1: Friday, Sep 19th, in class
Midterm Exam 2: Friday, Oct 24th, in class
Final Exam: TBA

All tests (midterm/final exam) are closed-book. However, you are allowed and recommended to bring a formula sheet (One-sided, Letter-size, self-prepared) in each exam.
- You will need to bring a calculator (TI-83/84 or above, TI-84 is definitely recommended) for each test. Cell phones can not be used during tests.

- R Studio will be introduced in class. It is powerful computing APP in computer for statistics. It is not required in our class.
- Academic misconduct including acts of cheating will not be tolerated.

**Homework**: Homework will be announced in the CANVAS throughout the semester.
- The due date of the homework will be announced in the class and/or the Canvas.
- Please note that your solutions need to be presented in a clear, readable format with sufficient details. NO CREDIT will be given to solutions lacking details or that are hard to read.
- All students must submit their own written work in their own words. Academic misconduct including plagiarism will not be tolerated.
- Homework will be collected at the start of the class on the due date, and this is the only acceptable way to turn in homework. No late assignments will be accepted unless there are extreme and documentable circumstances that are approved by the instructor.
- **One lowest homework score** will be dropped before counting the final points.

**Attendance**: Attendance will be taken at random classes using attendance record sheets.

**Semester Grade Calculation:** Your final course grade will be assigned based on the total points that you have accumulated from

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| **Quizzes** | **15%** |
| **Homework assignments** | **15%** |
| **Midterm I & II** | **20% each** |
| **Final** | **30%** |

According to the following grading scales:
A: 93-100pts, A-: 90-92pts, B+: 87-89pts, B: 83-86pts, B-: 80-82pts, C+: 77-79pts,
C: 73-76pts,   C-: 70-72pts,   D+: 67-69pts, D: 63-66pts, D-: 60-62pts, F: 59 or less pts

**Minimum passing grades:** This course is designated as a prerequisite of Probability & Statistics II (STAT 3038). A student must earn at least a **C-** grade on this course, to register for the course STAT 3038.

**About withdrawal:** The last day to online withdraw from the course is **Nov 21, 2025** (Friday).

In case a withdrawal shall occur, the instructor will be required to affirm whether or not you minimally participated in the class. Although the instructors will do their best to answer accurately, in the absence of any evidence to the contrary the instructors will affirm that you did **not** minimally participate. Ways for you to provide clear evidence of your presence in the class include submitting homework.

# Policies

**Academic Integrity Policy:** The University Rules, including the Student Code of Conduct, and other documented policies of the department, college, and university related to academic integrity will be enforced. Any violation of these regulations, including acts of plagiarism or cheating, will be dealt with on an individual basis according to the severity of the misconduct. (http://www.uc.edu/conduct/Academic_Integrity.html)

In particular, students are prohibited from using all forms of AI when completing work in this course. Any use of AI when completing coursework will be considered to be an instance of academic misconduct.

**Regarding Policy**: If a student believes that a grading error has occurred, he/she should request for regarding within the next 5 days after the work is returned to the class. This will apply even if the student is absence in the class on the day the work is returned unless prior permission was obtained from the instructor.

**Policy about make-up exam:** Only students with legitimate excuses will be allowed to make up missed exam. The student must request make-up tests within a reasonable amount of time after one of the following excusable events occurs:
1. **Illness**. Need official certification from you doctor, typed on medical stationary (with their license # to practice medicine on it).

2. **Attending the funeral of an immediate relative**. Need proof of attending the funeral with the date of the ceremony.
3. **Mandatory courtroom appearance**. Need a copy of your official court summons with the date.
4. **Winthrop Athletic event participation**. Need a signed letter from your coach no later than **one week prior to** the day of the exam.

**Special Needs Policy:** If you have any special needs related to your participation in this course, including identified visual impairment, hearing impairment, physical impairment, communication disorder, and/or specific learning disability that may influence your performance in this course, you should meet with the instructor to arrange for reasonable provisions to ensure an equitable opportunity to meet all the requirements of this course. At the discretion of the instructor, some accommodations may require prior approval by Disability Services. In order to take advantage of those available accommodations, students may contact the Disability Services Office at 210 University Pavilion (513-556-6823). (http://www.uc.edu/aess/disability.html)

**Religious Accommodation:** Ohio law and the University's Student Religious Accommodations for Courses Policy 1.3.7 permits a student, upon request, to be absent for reasons of faith or religious or spiritual belief system or participate in organized activities conducted under the auspices of a religious denomination, church, or other religious or spiritual organization and/or to receive alternative accommodations with regard to examinations and other course requirements due to an absence permitted for the above-described reasons. Not later than fourteen days after the first day of instruction in the course, a student should provide the instructor with written notice of the specific dates for which the student requests alternative accommodations. For additional information about this policy, please contact the Executive Director of the Office of Equal Opportunity and Access at (513) 556-5503 or oeohelp@UCMAIL.UC.EDU.

**Personal Communication Devices Policy:** Cell phones and PDAs must be either turned off or put on vibrate mode during class. Additionally, please make all efforts not to use cell phones during the class time. Cell phone usage is strictly prohibited during exams.

**Email Communication Policy:** All communications will be done via UCmail. The instructor will try his best to reply within 24 hours from receipt of emails.