

MATH 411A PROBABILITY THEORY
FALL 2019 (Sept 25-Dec 6)
MTWTh 11 - 11:50am in SAMUELSON 252

Instructor: Dr. Sooie-Hoe Loke
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Office: Samuelson 218H
Office Hours: MTWTh 10 - 10:50am and by appointment

Required Text: Hogg, Tanis, and Zimmerman, *Probability and Statistical Inference*, 9th Edition. This quarter we will cover Chapters 1, 2, 3, and the first half of Chapter 4.

Course Goals: This course covers the basic concepts of probability theory and lay the foundation for mathematical statistics. Specifically, we will cover:

- The axiomatic approach to probability theory
- Basic ideas in combinatorics
- Conditional probability, independence, and Bayes' Theorem
- Discrete and continuous random variables and their distributions
- Families of discrete and continuous distribution
- Mathematical expectations of random variables
- Bivariate and multivariate distributions

Prerequisite: Math 273 or permission.

Course Assessment: Your overall grade will be determined by the following:

- Two in-class exams (40% total); tentative dates: 3rd/4th week of Oct and 3rd/4th week of Nov. Exact dates will be announced at least a week ahead in class and on Canvas
- Comprehensive final exam (25%); given Thursday, Dec 12, from 8 - 10am
- Homework (30%)
- Problem session and participation (5%); see below for more information

Course grades will be assigned based upon the following scale:

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|-------------|-------------|-------------|-------------|-------------|-------------|------------|
| 93-100%=A | 90-92.9%=A- | 87-89.9%=B+ | 83-86.9%=B | 80-82.9%=B- | 77-79.9%=C+ | 73-76.9%=C |
| 70-72.9%=C- | 67-69.9%=D+ | 63-66.9%=D | 60-62.9%=D- | below 60%=F | | |

The instructor reserves the right to adjust the above scale (in the student's favor) if deemed appropriate.

Required calculator: A scientific or graphing calculator is also required. If you are planning to take Exam P (see below), some recommended calculators are TI-30Xa, TI-30X II (IIS solar or IIB battery), or TI-30XS MultiView (or XB).

Exam P: This course covers most of SOA Exam P material. Students are encouraged to take Exam P in March and enroll in MATH416A next quarter. For more information, see <https://www.soa.org/education/exam-req/edu-exam-p-detail.aspx>.

Homework: Weekly homework will be assigned in class. Due dates will be announced at the time of the assignment. Homework must be done neatly, stapled, and written on clean-edged paper. Your work should be clear, in a logical order, and provide sufficient explanation. Credit will not be given for late homework. A good guide is to think about whether another student in the class who didn't know how to do this particular problem could understand your solution. Collaboration on homework is permitted, but copying is not permitted. You must write up a problem on your own, even if you worked with others to figure it out. Credit will not be given to any party for work which is identical.

Problem Session write-ups and Participation: We will have weekly “problem sessions” throughout the quarter, where instead of covering new material in class you will be given several problems to work on. You are encouraged to work on these with others in the class. At the end of class, students will be assigned to write up solutions to the problems. You must write up at least TWO problems over the course of the quarter. Problems will be assigned first by taking volunteers among those who still have write-ups to complete and then, if there are no volunteers, choosing among that same group at random. When writing up a solution to a problem, remember that your fellow classmates are going to be reading it. Your solution must either be submitted to me electronically or in a form suitable for scanning. To receive credit, your correct solution is due by 11AM on the third business day after the problems are done in class (e.g. the write-ups from a Tuesday problem session day would be due by 11AM on Friday). *Credit will not be given until a solution is correct and reasonably well written.* You are strongly encouraged to discuss your solution with me before it is due. Late solutions will be docked one-half of one percentage point per business day. The submitted solutions will be posted on Canvas. You are expected to attend, fully participate, and make a sincere effort in every problem session (not making a sincere effort includes working on material for other courses, chatting, leaving early, etc. and will result in lower participation grade).

Exams: Any changes to the tentative exam schedule will be announced in advance. Make-up arrangements must be made at least 1 day prior to an exam unless you can document an unexpected circumstance beyond your control that prevented you from taking the exam.

Academic Honesty: Consult university policies ([CWUP 5-90-040\(22\)](#), [CWUR 2-90-040\(22\)](#), and [WAC 106-125-020](#)) for student conduct, cheating, plagiarism, and other academic expectations. CWU's policies and recommendations for academic misconduct will be followed, leading to disciplinary action up to and including failing the course.

Diversity Statement: CWU expects every member of the university community to contribute to an inclusive and respectful culture for all in its classrooms, work environments, and at campus events. As a student in this course, you are expected to treat your professors, fellow students, and other people affiliated with your work at CWU with respect, regardless of their sex, race and color, religion and creed, national origin, sexual orientation, gender identify and gender expression, disability and use of assistive devices or a service animal, and veteran or military status.

Disability Support Services: CWU is committed to creating a learning environment that meets the needs of its diverse student body. Students with disabilities should contact Disability Services to discuss a range of options to removing barriers, including accommodations: Hogue Hall 126, (509) 963-2214, ds@cwu.edu

Religious Holiday Absences: In compliance with RCW 28B.137.010, CWU makes every effort to deal reasonably and fairly with students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. Students must present written notice to their instructor within the first two weeks of class listing the specific dates on which accommodations are required. Contact the Dean of Student Success at (509) 963-1515 for further information or questions.

Expectations for Student Conduct: Students in this class are expected to interact with students and the professor professionally. Instances of disruptive conduct¹, obstructive conduct¹, or harassment² will be referred to the Dean of Student Success.

The instructor reserves the right to change the policies contained in this syllabus as dictated by developments during the quarter. Changes will be announced in class and on Canvas.

1. Per WAC 106-125-020, the term “disruptive” or “obstructive” conduct means conduct, not protected by law, that interferes with, impedes, or otherwise unreasonably hinders the normal teaching, learning, research, administrative, or other functions, procedures, services, programs, or activities of the university. The term includes disorderly conduct, breach of the peace, violation of local or university noise policies, lewd or obscene conduct, obstruction of pedestrian or vehicular traffic, tampering with student election processes, or interfering with the orderly conduct of university investigations or disciplinary proceedings, including interfering with or retaliating against any witness, party, or other participant.
2. The term “harassment” means unwelcome and offensive conduct, including verbal, nonverbal, or physical conduct, that is directed at a person because of such person's protected status and that is sufficiently serious as to deny or limit the ability of a student to participate in or benefit from the university's educational program, or that creates an intimidating, hostile, or offensive environment for any campus community member(s). Protected status includes a person's actual or perceived race, color, national origin, gender, disability, or other status protected by law.