

**Intro to Mathematical
Statistics I**

SYLLABUS AND COURSE POLICIES

Instructor:

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Office hours: Thursday 12:30pm – 1:45pm or by appointment

Teaching Assistant:

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Course Information (August 27th to December 7th):

Lectures: Tuesday, Thursday 11:00am – 12:15pm (KNS 105)

Discussion: Monday 12:20pm – 1:10pm (JONS 229)

Credits: 3

Required Textbook:

Wackerly, Mendenhall, Scheaffer, *Mathematical Statistics with Applications* (edition 7), Cengage Learning.

Prerequisites: MATH 2110 or 2130 (*Note: Students may not receive credit for both STAT 3345 and 3375, or both STAT 3375 and 5585*)

Course Objectives:

The mathematical theory underlying statistical methods. Probability spaces, distributions in one and several dimensions, generating functions, limit theorems, sampling, parameter estimation. Neyman-Pearson theory of hypothesis testing, correlation, regression, analysis of variance.

Grading Breakdown:

Midterm – 30%

There will be an in-class, closed-book midterm for this course on October 4th. Students will be allowed a basic calculator and **ONE** double-sided page of a note sheet (to be collected after the midterm). With the exception of a documented, excused absence as dictated by the university, there will be no make-up midterms.

Final Exam – 40%

The final exam date and location is yet to be decided by the university. The final exam will not be cumulative, in the sense that it will not explicitly test concepts covered on the midterm. However, knowledge of the midterm material is assumed when taking the final exam. For this exam students will be allowed 2 pages of notes, both front and back (the idea being 1 page for each half of the material).

Problem Sets – 25%

This is perhaps the most taxing part of the course, but also the most important. Homework assignments will be posted a week in advance (the previous Tuesday), and will be due almost every Tuesday. Please see the course schedule below for the due dates. There are 11 assignments and one will be dropped. The assignments are to be placed on the front desk at the end of class on the due date. Any assignment handed in early without a valid reason will not be accepted (i.e. don't just hand in your assignment and then skip class). Additionally, late submissions will not be accepted. I understand that sometimes the stress of the semester catches up with you, so I will allow at most 1 extension per person on the homework assignments.

Style – 5%

This is meant to reflect your mathematical "style." This means the neatness of your submissions, the flow of your proofs, and overall if I or the grader can read and understand what you've written on any submission. If either of us cannot read what you've written or understand your logic after 2 read-throughs, then you will lose 1 style point. I expect everyone to get all 5 points here.

Course Schedule:

Week	Topics Covered	Problem Set Due Date
Week 1: 8/28, 8/30	Introduction & Stats Concepts Set Theory	
Week 2: 9/4, 9/6	Basic Probability Counting Techniques	Problem Set 1 – Due 9/4
Week 3: 9/11, 9/13	Bayes' Rule Discrete Random Variables	Problem Set 2 – Due 9/11
Week 4: 9/18, 9/20	Bernoulli & Binomial Geometric & Negative Binomial	Problem Set 3 – Due 9/18
Week 5: 9/25, 9/27	Hypergeometric & Poisson Moment Generating Functions	Problem Set 4 – Due 9/25
Week 6: 10/2, 10/4	Midterm Review Midterm	Problem Set 5 – Due 10/2
Week 7: 10/9, 10/11	Continuous Random Variables Continuous Uniform	
Week 8: 10/16, 10/18	Gamma Function Normal Distribution	Problem Set 6 – Due 10/16
Week 9: 10/23, 10/25	Beta Distribution Multivariate Distributions	Problem Set 7 – Due 10/23
Week 10: 10/30, 11/1	Marginal & Conditional Distributions Independence & Expectation	Problem Set 8 – Due 10/30
Week 11: 11/6, 11/8	Covar, Lin Comb, Conditional Expect Transformations	Problem Set 9 – Due 11/6
Week 12: 11/13, 11/15	Jacobian Transformations Order Statistics	Problem Set 10 – Due 11/13
Week 13: THANKSGIVING BREAK		
Week 14: 11/27, 11/29	BUFFER – Supplemental Topics if Time Allows	Problem Set 11 – Due 11/27
Week 15: 12/4, 12/6	Final Review	

Grading Scale:

- A: 93 and above
- A-: 90-92
- B+: 87-89
- B: 83-86
- B-: 80-82
- C+: 77-79
- C: 73-76
- C-: 70-72

D: 60-69
F: Below 60

Academic Integrity:

The more you collaborate, the better! Statistics is a field in which working in isolation is detrimental to success. That being said, the university policy regarding plagiarism is always in effect for submitted assignments. You may find the university's policy here: <https://lib.uconn.edu/about/get-help/writing/plagiarism-resources/>. However, I fully support students collaborating and sharing ideas before forming their own responses for submission.

Disabilities:

Disabilities are happily accounted for in this course. If you have any special requirements for lectures, labs, exams, or assignments I will be happy to make the arrangements necessary. However, as per UCONN policy, you must first contact the Center for Students with Disabilities (CSD). Their website can be found here: www.csd.uconn.edu. If you need any special accommodations, I strongly recommend contacting them as soon as possible (read: not the night before an exam) in order to ensure a smooth process. If you do not have the proper documentation from the CSD, then I'm afraid I cannot give any accommodation. Additionally, accommodations will not be made retroactively.

Tutoring:

The department offers free tutoring services for students. All tutoring hours are held in AUST 303. Please refer to the schedule posted on the door of AUST 303 for the logistics.

A Note On Success:

Ideally, to succeed in this course, I suggest you review the lecture notes covered that day before coming to class. Then, print the lecture notes and take notes on those print-outs as we discuss. Finally, review the lecture notes again once after the lecture. Don't waste your time writing down what's on the PowerPoint. The class is only 75 minutes each lecture, so we will only be covering about 8 pages of notes each day. This is quite do-able, and I believe that if you follow this schedule you'll have a firm understanding of the material. Then, review the notes again for the midterm/final to make a strong review sheet. If you engage in the discussion sections, the homework assignments shouldn't be too challenging.

*****The instructor reserves the right to modify the above mentioned dates, policies, and procedures as he sees fit. Please pay attention and keep a look out for any such changes.*****