

MATH 4860/5880, Probability and Mathematical Statistics II

Spring 2024

Instructor:

JS Lee

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Class Web Page:

http://faculty.uml.edu/jongsoo_lee/4860S24.html

Be sure to check often for announcements, homework assignments and other course material.

Class Location and Time:

Olsen 348

Tu 6:30 - 9:20 PM

Office Hours:

TuTh 8:00 - 9:30 AM

Or by appointment.

Text:

- Wackerly, Mendenhall, Scheaffer, *Mathematical Statistics with Applications*, 7th Edition, Duxbury (Main textbook; will be referred to as WMS). Will cover chapters 6 to 10 of WMS. Additional topics may be covered, relevant for 5880 (graduate) students.
- Ash, *Statistical Inference: A Concise Course*, Dover.

Overview:

This course provides an introduction to mathematical statistics for students with background in calculus-based probability, MATH 4070/5090. As a continuation of MATH 4070/5090, we learn the concepts and techniques of mathematical statistics:

- Random sampling; sampling distributions; large sample theory including CLT
- Estimation including bias and MSE; efficiency; consistency; sufficiency; Rao-Blackwell Theorem and UMVUE; method of moments; MLE
- Hypothesis testing, including tests of mean, variance and proportions; Types I and II errors and power; p-values, Neyman-Pearson Lemma; likelihood ratio tests; chi-squared goodness-of-fit tests for tables
- Confidence intervals, for one and two sample means, proportions and variances

Homework:

Homework will be assigned weekly (unless otherwise announced) and must be turned in at or before the beginning of class on the due date. You may work with fellow students on the homework problems, but please write up the homework solutions on your own and show all your work. Late homework will be subject to penalty unless the student has obtained a prior approval from the instructor (not accepted at all if more than a few days late or unexcused). *The homework grade will be made available to student only by visiting the instructor and discussing the homework solutions.*

Exams:

There will be a quiz, two exams and a final exam (all in-class).

Quiz:	Tuesday, February 27
Exam 1:	Tuesday, March 19
Exam 2:	Tuesday, April 16
Final Exam:	TBD

All exams are closed-book, but you may bring a limited amount of notes.

Attendance Policy:

Attending every class is required. You may be called upon to participate in class activities and are responsible for everything said in class. Excused absences require valid justification, and make-up works are at the discretion of the instructor.

Academic Integrity:

Academic dishonesty is prohibited in all programs of the University and sanctions may be imposed on any student who commits an act of academic dishonesty. Details on UML policy can be found at

- www.uml.edu/catalog/undergraduate/policies/academic-policies/academic-integrity.aspx (Undergraduate)
- www.uml.edu/Catalog/Graduate/Policies/Academic-Integrity.aspx (Graduate)

Course Grade (approximate):

- 40% Homework and class participation
- 5% Quiz
- 15% Exam 1
- 15% Exam 2
- 25% Final exam