

Course Title
MATH 4056-FALL 2018
Padmanabhan Sundar

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Office Hours: MWF: 3:30-4:30

Textbook: Mathematical Statistics and Data Analysis, John A. Rice, Duxbury Press, 2nd Edition

Course Description Mathematical Statistics: Statistical inference including hypothesis testing, confidence intervals, estimators, and goodness-of-fit. The new syllabus covers the VEE - Mathematical Statistics requirements.

Prerequisites: MATH 3355.

Credit Hours for MATH 4056: 3

15 week Course Outline:

- Week 1 Review of probability distributions, expectation and variance
- Week 2 Sampling distributions: Normal, Chi-squared, t and F
- Week 3 Unbiased, moment, and maximum likelihood estimators
- Week 4 Mean squared error, bias and variance in estimation
- Week 5 Cramer-Rao lower bound, efficiency and consistency
- Week 6 Sufficiency and UMVUE
- Week 7 Exact and approximate confidence intervals
- Week 8 Confidence intervals for two-sample problems
- Week 9 Confidence intervals for proportions
- Week 10 Testing: Significance level, power and Neyman-Pearson Lemma
- Week 11 Likelihood ratio tests, uniformly most powerful tests
- Week 12 Two-sample problems, approximate tests of hypothesis
- Week 13 Goodness of fit tests and contingency tables
- Week 14 Least square principle and applications
- Week 15 Review

Grade: LSU letter grades will be assigned according to this table. Your end of semester numerical grades will be rounded up to whole numbers.

A+ 98 – 100

A	94 – 97
A-	90 – 93
B+	87 – 89
B	84 – 86
B-	80 – 83
C+	77 – 79
C	71 – 76
C-	68 – 70
D+	65 – 67
D	62 – 64
D-	58 – 61
F	57 and below

Final grades will be computed from the following activities:

Three in-class exams	45%
Homework	25%
Quiz	10%
Final exam (cumulative)	20%

Description of Activities that will be graded:

Three exams Exams will be held in class, each for 50 minutes. Exam content will address both conceptual understanding and problem solving. The exam grade is calculated as an average of the individual percent grades.

Homework A homework will be assigned at the end of each week, and will be collected at the end of the following week. The homework grade is calculated as an average of the individual percent grades.

Quiz A quiz will be taken in class at the end of each week. The quiz grade is calculated as an average of the individual percent grades.

Final Exam A comprehensive final exam will be taken at the date and time published in the LSU Final Exam schedule. The exam grade will be calculated as a percentage.

Expectations

The aim of the course is to understand the mathematical theory of statistical inference. The emphasis will be on the conceptual understanding of

the material, and the ability to use the underlying mathematical methods. Attendance of classes is very important. Students are expected to spend a **minimum of six** hours per week on reading and homework outside of class.

Academic Integrity

The LSU student code of conduct explains student rights, excused absences, and what is expected of student behavior. Students are expected to understand this code as described at: <http://students.lsu.edu/saa/students/code>. Students are required to abide by the LSU Student Code of Conduct. Any violations of the LSU student code will be duly reported to the Dean of Students. Students may not use cell phones, apple watches, or any other electronic devices in an exam unless approved by the instructor prior to the exam.

Disability Statement

Louisiana State University is committed to providing reasonable accommodations for all persons with disabilities. If you have a disability that may affect your work in this class and for which you may require accommodations, please see a staff member in Disability Services so that such accommodations can be considered. Students who receive accommodation letters should meet with me to discuss the provisions of those accommodations as soon as possible.

Academic Success

The primary ingredients of your academic success are attending class, managing your time efficiently, taking good notes, and developing good critical thinking and communication abilities. LSU has a number of excellent resources that will assist you in developing these skills. The place to begin is the Center for Academic Success (<http://students.lsu.edu/academicsuccess>). The CAS offers guidance on what learning strategies are best suited to your talents, tutoring in the basic subjects, and workshops on a variety of topics, from note taking to time management. Communication Across the Curriculum (<http://cxc.lsu.edu>) assist students in developing the communication skills necessary for academic and professional success. For professional success, the LSU Olinde Career Center (<http://students.lsu.edu/careercenter>) can assist you in choosing a major and a profession that best suits your talents and passions and help you develop a four year career plan to ensure success when you graduate from LSU.