

STT 861 [Section 1]: Theory of Prob & Stat I

Michigan State University, Fall 2019

Disclaimer: This Syllabus serves Section 1 of STT 861 for Fall 2019. The course instructor reserves the right to make revisions to the Syllabus and the course schedule that he considers to be academically advisable. Changes will be announced in class and on the course web page. It is students' responsibility to keep up with any changed policies and assignments.

Instructor:

ASHOKE KUMAR SINHA

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OFFICE HOUR: Tue & Thu 4:00–5:30 p.m. or by appointment.

Lecture Meeting: Mon, Wed & Fri 10:20-11:10 a.m. in A134 Wells Hall.

Attendance: You are expected to attend all meetings of the class. If you miss a class for whatever reason, you are responsible for all covering materials, assignments and deadlines.

Course web page: <http://loncapa.msu.edu/>. MSU username and password are required to login to Lon-Capa. Follow the links 2019 Fall, STT861. Homework, class-notes, scores etc. will be uploaded on the Lon-Capa course webpage.

Textbook: Casella & Berger: *Statistical Inference*, 2nd ed. Publisher: Cengage, ISBN: 0534243126.

Prerequisite: MTH 234 and MTH 309.

Credit: 3.

Important Dates

Aug 28	First day of class
Sep 02	Labor Day Holiday - University Closed
Sep 04	On Line open add period ends (8.00 p.m.)
Sep 23	Last day to drop a class with refund (8.00 p.m.)
Oct 03	Exam 1 (6.00-7.30 p.m., A232 Wells Hall)
Oct 16	Middle of Semester - last day for withdrawal or dropping courses with no grade (8.00 p.m.)
Nov 07	Exam 2 (6.00-7.30 p.m., A232 Wells Hall)
Nov 28-29	Thanksgiving Holiday - University Closed
Dec 06	Classes end
Dec 13	Final Exam (7:45-9:45 a.m., A134 Wells Hall)

Course Description: The course STT 861 is about the theory of probability. Here probability will be introduced as a set-function satisfying certain axioms, and we shall develop further properties starting from those axioms. We shall cover chapters 1-5 from the textbook. This includes topics such as:

- Probability axioms and rules, basic combinatorics, probability models.
- Random variables and random vectors.
- Expected values, covariance matrices, moment generating functions.
- Probability inequalities.
- Transformation of random variables.
- Special distributions including exponential family.
- Convergence in probability and distribution.
- Weak Law of Large Numbers and Lyapunov Central Limit Theorem.

Homework: Homework will be regularly assigned through out the course and will be posted on the Lon-Capa website. Homework will be collected at the start of the lecture on the due date. Late homework is given no credit. There is no make-up for homework. **The homework with lowest percentage score will be dropped.**

Furthermore, there will also be many suggested problems, which you should practice, but they will not be collected and graded.

Exams: There will be two mid-term exams (namely Exam 1 and Exam 2) and a final exam. If you cannot take an exam, contact the instructor as soon as possible to make other arrangements - ***make up exams*** will be given only in case of verifiable excuses. More information on the exams will be given later.

Grading Policy: The final score will be based on:

Homework: 15%, *Exam 1:* 25%, *Exam 2:* 25%, *Final:* 35%

Grading is distributed according to the following scale:

4.0 :	$90\% \leq \text{Score} \leq 100\%$	2.0 :	$60\% \leq \text{Score} < 65\%$
3.5 :	$80\% \leq \text{Score} < 90\%$	1.5 :	$55\% \leq \text{Score} < 60\%$
3.0 :	$70\% \leq \text{Score} < 80\%$	1.0 :	$50\% \leq \text{Score} < 55\%$
2.5 :	$65\% \leq \text{Score} < 70\%$	0 :	$0\% \leq \text{Score} < 50\%$

Academic Honesty: The Department of Statistics and Probability adheres to the policies of academic honesty as specified in the General Student Regulations 1.0, Protection of Scholarships and Grades, and in the All-University of Integrity of Scholarships and Grades which are included in Spartan Life: Student Handbook and Resource Guide. Plagiarism or any other sort of fraudulent behavior in exam and/or homework assignment will result in an automatic zero in that exam and/or homework assignment. Student(s) involved in any fraudulent act will be reported to the relevant authority.

ADA: To arrange for accommodation, a student with special need should contact the Resource Center for People with Disabilities [Phone: 353-9642, Web Site: <http://www.rcpd.msu.edu>].