STT 863: Statistical Methods I
Michigan State University, Fall 2019

Disclaimer: This Syllabus serves STT 863 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 12:40–2:00 p.m. in A222 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, STT863. Homework, class-notes, scores etc. will be uploaded on a Lon-Capa page.

Prerequisite: (STT 442 or STT 862) and MTH 415. **Credit:** 3.

Course Materials:

1. **Textbook:** Kutner, Nachtsheim, Neter: *Applied Linear Regression Models (with Disk), 4^{th} ed.* Publisher: McGraw-Hill, `ISBN: 9780073014661`.
2. **Software:** R and RStudio to perform data analysis.
3. **Calculator:** Scientific calculator (no graphic calculator is required).

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 14	**Midterm Exam (12:40-2:00 p.m., A222 Wells Hall)**
Oct 16	Middle of Semester - last day for withdrawal or dropping courses with no grade (8.00 p.m.)
Nov 28-29	Thanksgiving Holiday - University Closed
Dec 06	Classes end (the last lecture of STT 863 is on Dec 04)
Dec 10	**Final Exam (12:45-2:45 p.m., A222 Wells Hall)**

Course description: In this course we shall study statistical methodologies based on linear regression models. We shall cover selected topics from simple linear regression (Ch 1-5), multiple linear regression (Ch 6-11), autocorrelation in time series data (Ch 12) and *if time permits* LASSO type and high dimensional variable selection and introduce linear mixed effect models.

It is crucial that a student makes sure that he/she has a working knowledge of linear algebra (MTH 415), probability (STT 441 or STT 861) and statistical inference (STT 442 or STT 862) before enrolling in this course.

Homework: Homework will be regularly assigned through out the course and will be posted on the Lon-Capa website. Homework must be turned in on its due date; they 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.**

Quizzes: There will be quizzes at regular intervals. No advance notice may be given for quiz date or time.

Exams: There will be one midterm exam and one 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:

$$\textit{Homework}\text{: } 20\%, \qquad \textit{Quizzes}\text{: } 15\%, \qquad \textit{Midterm}\text{: } 30\%, \qquad \textit{Final}\text{: } 35\%$$

Grading is distributed according to the following scale:

4.0 :	$90\% \leq$ Score $\leq 100\%$	2.0 :	$60\% \leq$ Score $< 65\%$
3.5 :	$80\% \leq$ Score $< 90\%$	1.5 :	$55\% \leq$ Score $< 60\%$
3.0 :	$70\% \leq$ Score $< 80\%$	1.0 :	$50\% \leq$ Score $< 55\%$
2.5 :	$65\% \leq$ Score $< 70\%$	0 :	$0\% \leq$ 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. Please visit the website of *MSU Policies, Regulations and Ordinances Regarding Academic Honesty and Integrity* (`https://ombud.msu.edu/academic-integrity/index.html`) for more detail.

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`].