CMSE 381 Fundamentals of Data Science Methods

MWF 9:00 AM - 10:10 AM; Zoom: https://msu.zoom.us/j/4023112734

Instructor: Yuying Xie, 1513 Engineering Building 1513, **Email:** xyy@msu.edu;
   Office Hours: Wenday, 10:15 am -12:00 pm, or by appointment
TA's Office Hour: Thursday,10am - 12pm. Zoom: https://msu.zoom.us/my/ssstudy with
password 989898
TA's email: shaningy@msu.edu

Textbook: *An Introduction to Statistical Learning: With Applications in R*
You can download it from https://statlearning.com/.
   Additional Reference: *The Elements of Statistical Learning: Data Mining, Inference, and Prediction.* You can download it from https://web.stanford.edu/ hastie/ElemStatLearn/.

Prerequisites:(STT 180 and MTH 314 and CMSE 201 and STT 380) or (STT 180 and MTH 314 and CMSE 201 and STT 441 and STT 442).

Course Description: CMSE 381 is a introduction course to statistical and machine learning. It covers the fundamental of data science methods, including unsupervised learning and supervised learning, feature extraction, dimension reduction, clustering, regression and classification.

Course objectives: Understand how to find patterns and structure in data using statistical methods and machine learning algorithms, and be able to implement simple versions of such techniques. Understand the concepts of unsupervised and supervised learning broadly, in addition to having proficiency in common algorithms and ideas within each field

Homework:

- Homework will be assigned every class day by 7: 00 p.m.

- Homework will be due at the beginning of class on Friday. Please submit your homework through D2L.

- **No** late homework will be accepted.

Quizzes:

- There are **three** 20 minutes Quizzes at the beginning of the class during the semester.

- The quiz questions will be based on homework problems and the examples given in classes.

- **There will be no make up quizzes.**

- The quizzes will be given in class on the following days:
  Quiz 1: Feb 1st; Quiz 2: Mar 8th; Quiz 3: Apr 9th;

Exams:

- There will be two in-class midterm exams on Friday, Feb 12th and Friday, March 26th.

- The final exam will be **comprehensive** and be given on Tuesday, Apr 27th 12:45pm - 2:45pm.

- When computing your grade at end of the semester, if your worse midterm score is lower than your score on the final exam, I will replace the midterm score with your final exam score. All exams are required, no make up exams.

Final Grades:

- 20% for Homework

- 10% for Quizzes

- 20% for Midterm 1 (In class, Fri, Feb 12th)

- 20% for Midterm 2 (In class, Fri, Mar 26th)

- 30% for the comprehensive Final Exam (Monday, Apr 27th).

The grades will be given roughly according to the following scheme:

Percentage (%)	90-100	80-89	70-79	60-69	50-59	40-49	30-39	0-29
Grade	4.0	3.5	3.0	2.5	2.0	1.5	1.0	0

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 Scholarship and Grades which are included in Spartan Life: Student Handbook and Resource Guide. Student who plagiarize will receive a grade 0.0 on the assignment or exam.

Accommodations for Students with Disabilities:
Students with disabilities should contact the Resource Center for People with Disabilities at 517-884-RCPD or on the web at rcpd.msu.edu. If you are eligible for an accommodation, you will be issued a verified individual service accommodation (VISA) form. Please present this form to me at the start of the term or two weeks prior to the accommodation date.

The instructor reserves the right to make any changes that he deems academically advisable.