

STT 422: Statistics II

Michigan State University, Spring 2024

Instructor: Shrijita Bhattacharya

EMAIL: bhatta61@msu.edu, OFFICE: C419 Wells Hall or by appointment.

OFFICE HOUR: Mondays and Wednesdays 11:30 AM -12:30 PM at office or by appointment.

Teaching Assistant: Hanyu Yang

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Lectures Schedule: Mondays, Wednesdays and Fridays 10:20 AM-11:10 AM, A330 Wells Hall.

In case a student is unable to attend lectures over an extended period, please collect lecture notes uploaded online and reach out to the instructor for additional help.

In case the instructor is unable to attend lectures over an extended period, lecture notes will be made available online. Also, make up classes and/or substitute lectures shall be arranged for.

Help Room: <https://stt.natsci.msu.edu/academics/statistics-learning-center/>

Course Web Page: All course materials and homeworks will be posted on D2L.

Course Information: This is a second course in statistics covering topics in design of experiments, multiple regression, non-parametric methods, and categorical data methods. The goal is introduction, implementation, practice, and recognition and synthesis of a wide range of useful statistical methodologies.

Recommended Background: STT 421. Students should have had a first course in statistics and be familiar with normal and t-distributions, use of p-values, and confidence intervals and tests in one-sample problems, and some basic probability concepts.

Required Course Materials: Textbook: Introduction to the Practice of Statistics, 6th ed., by Moore, McCabe, and Craig.

Topics to be covered: We shall mainly cover chapters 7, 8, 9, 10, 11, 12, 13, 14, 15, 16 from the textbook (chapters 14 and 15 are on the CD that comes with the textbook).

Software Rstudio (and occasionally Minitab and Excel) will be used for data analysis.

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.

Exams: There will be 2 in-class exams during the term, and the final exam.

Table 1: **Examination Schedule**

| EXAM | DATE | TIME |
|---------|------------------|-----------------------------------------|
| Exam 1: | Monday, Feb 19 | 10:20 AM - 11:10 AM at A330 Wells Hall |
| Exam 2: | Monday, March 25 | 10:20 AM - 11:10 AM at A330 Wells Hall. |
| Final: | Thursday, Apr 25 | 7:45 AM - 9:45 AM at A330 Wells Hall |

If you cannot take an exam, contact the instructor as soon as possible to make other arrangements (to be considered only in case of verifiable excuses). Make-ups cannot be given after the exams have been returned.

Homework: There will be nine homeworks to turn in. Unexcused late homework (turned in up to one class date late) is given only 60% credit. Later homework is given no credit. There is no make-up for homework.

Grading: Attendance: 3%, Homework: 27%, Exam 1: 15%, Exam 2: 15%, Final exam: 40%.

| | |
|----------------------------------------|---------------------------------------|
| 4.0 : $90\% \leq \text{Score} < 100\%$ | 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 : $0\% \leq \text{Score} < 50\%$ |

DEI Statement: This class aims to be accessible and inclusive to people from different backgrounds and beliefs. Any form of discrimination or prejudice based on age, color, gender, disability, national origin, political belief, race, religion, sexual orientation and veteran status is strongly discouraged. It shall be ensured that all class materials cover examples pertinent to varying ethnic groups and cultures. If someone has a name and/or set of pronouns that they would like to be referred by, please let the instructor know. We (like many people) are still in the process of learning about diverse perspectives and identities. If something said in class (by anyone) makes you feel uncomfortable, kindly reach out to the instructor (anonymous feedback is also welcome).

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.

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>].

Mandatory reporting: MSU employees, with limited exceptions, are required to report allegations of sexual assault, sexual harassment, and other prohibited conduct involving members of the University community. Details for reporting can be found at <https://civilrights.msu.edu/policies/relationship-violence-and-sexual-misconduct-and-title-ix-policy.html>.

Grief absences: MSU has a policy on grief absences. It is described at <https://reg.msu.edu/ROInfo/Notices/GriefAbsence.aspx>.

FERPA rules on student privacy rights are available at <http://www.reg.msu.edu/ROInfo/Notices/PrivacyGuidelines.asp>.

Emergency situations: For additional suggestions for handling emergency situations in the classroom, contact the Ombudsperson's office <https://ombud.msu.edu/education-training-assessments/presentations-trainings>.

Disclaimer: The instructor reserves the right to make any changes she considers 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.

Tentative Class Schedule:

| WEEK OF | CHAPTER | HOMEWORK |
|---------|-----------------------------|----------|
| Jan 08 | 7.1, 7.2 | |
| Jan 15 | 8.1, 8.2 | HW1 |
| Jan 22 | 9.1, 9.2 | HW2 |
| Feb 05 | 10.1, 10.2 | HW3 |
| Feb 12 | 11.1, Review | HW4 |
| Feb 19 | Exam 1 , 11.2 | |
| Feb 26 | Spring break | |
| Mar 04 | 12.1, 12.2 | HW5 |
| Mar 11 | 12.2, 13.1 | HW6 |
| Mar 18 | 13.2, Review | HW7 |
| Mar 25 | Exam 2 , 14.1 | |
| Apr 1 | 14.2, 15.1 | HW8 |
| Apr 8 | 15.2, 16.1 | HW9 |
| Apr 15 | 16.2, Review for Final Exam | |

Important Dates:

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|---------------|-----------------------------------------------------|
| Jan 08 | Classes begin; late enrollment fee begins. |
| Jan 12 | Close of add period. |
| Jan 15 | Martin Luther King Day (no classes). |
| Feb 01 | Last day for 100% refund. |
| Feb 19 | Exam 1 (10:20 AM - 11:10 AM) |
| Feb 26-Mar 01 | Spring break. |
| Mar 04 | Middle of semester; last day to drop with no grade. |
| Mar 25 | Exam 2 (10:20 AM - 11:10 AM) |
| Apr 21 | Last day of classes. |
| Apr 25 | Final exam (7:45 AM - 9:45 AM). |
