



MATH 200: Statistical Methods I
Summer 2022 Syllabus
July 11 – August 5, 2022

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|------------------------|--------------------------|
| Place/Time: TBA | Instructor: TBA |
| Office: TBA | Office Hours: TBA |
| 3 Credits | E-mail: TBA |

Course Description

Concepts and methods of statistics, including descriptive statistics, significance tests, estimation, sampling, and correlation.

Text

Elementary Statistics, by Triola, Pearson Publishing, 13th edition, © 2018

Topic Calendar

| Day | Sections Covered (Tentative) |
|-----|---|
| 1 | 1.1 Data; 1.2 Displaying Distributions with Graphs |
| 2 | 1.3 Describing Distributions with Numbers |
| 3 | 1.4 Density Curves and Normal Distributions |
| 4 | 2.1 Relationships; 2.2 Scatterplots; 2.3 Correlation |
| 5 | 2.4 Least-Squares Regression; 2.5 Cautions about Correlation and Regression |
| 6 | 2.6 Data Analysis for Two-Way Tables; 2.7 The Question of Causation |
| 7 | 3.1 Sources of Data; 3.2 Design of Experiments |
| 8 | 3.3 Sampling Design; |
| 9 | 3.4 Ethics; Review of Midterm Exam |
| 10 | Midterm Exam |
| 11 | 4.1 Randomness; 4.2 Probability Models |
| 12 | 4.3 Random Variables; 4.4 Means and Variances of Random Variable |
| 13 | 4.5 General Probability Rules; 5.1 Toward Statistical Inference |
| 14 | 5.2 The Sampling Distribution of a Sample Mean |
| 15 | 5.3 Sampling Distribution for Counts and Proportions |
| 16 | 6.1 Estimating Confidence |
| 17 | 6.2 Tests of Significance |

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|----|---|
| 18 | 6.3 Use and Abuse of Tests |
| 19 | 6.4 Power and Inference as a Decision & Final Exam Review |
| 20 | Final Exam |

Course Outcomes

Upon successful completion of this course, students will be conversant with

- basic statistical terminology
- various graphical representations of data
- common measures of centrality and spread
- the use of standard normal tables
- properties of the correlation coefficient
- simple linear regression
- fundamentals of data production via sampling and experimentation
- sampling distributions, large number laws, and the central limit theorem
- confidence intervals and hypothesis tests for population means

Software: R and SAS

R is a free, open-source software for statistical analysis and programming. Download R through <http://cran.r-project.org>. The downloaded software is sufficient for use; yet R-Studio is recommended as a convenient editor for R, especially for beginners. Download R-Studio from <http://www.rstudio.com/products/rstudio/download/>. R-Studio does not run by itself. To use R-Studio you need to also install R.

SAS University Edition is free, open-source software for statistical analysis and programming. Download SAS University Edition through https://www.sas.com/en_us/software/university-edition.html.

Alternative software packages are JMP, SPSS, MINITAB (available via BSU).

Homework

Homework problems are online, we will use the online resource [Launchpad](#) for weekly homework assignments and supplemental materials. Please refer to Launchpad Instruction on the blackboard for more details. Some written homework may also be collected. NO LATE HOMEWORK WILL BE ACCEPTED.

Blackboard

Grades and additional course content will be uploaded to [Blackboard](#). Make sure to check it regularly for updates.

Important Notes about Submitted Work

On all of your written assignments you must show all work for the problems to receive full credit, even if the final answer is correct. Do not submit just the final answer not supported by any work. Your handwriting must be legible, your name and class time must be clearly written at the top of the front page. Proper notation is mandated. Multiple pages must be stapled.

Midterm Exams

You will take one mid-term exam during the semester. Exam is given in class, time will be limited to class time. Each will involve a mix of mechanical skills and conceptual reasoning. The best possible preparation for them is regular attendance and completion of assigned homework & quizzes. You may have 1 page 8x11 of hand written notes (1 side only) on each exam, including a final exam, no specific problems solved may be included. Make-up exams are only given in case of documented emergencies.

Final Exam

The final exam will take place on Friday, August 5.

Grading

Your final course grade will be determined by

Homework: 25%

Attendance: 20%

Midterms: 20%

Final Exam: 25%

Grading Scale:

Letter grades will be assigned as follows:

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|----|--------|----|----------|
| A | 93-100 | C | 73-76 |
| A- | 90-92 | C- | 70-72 |
| B+ | 87-89 | D+ | 67-69 |
| B | 83-86 | D | 63-66 |
| B- | 80-82 | D- | 60-62 |
| C+ | 77-79 | F | below 60 |

Academic conduct

Students are encouraged to discuss the course material with one another and form study groups to prepare for the quizzes and exams. However, collaboration on individual assignments (homework, quizzes, and exams) is not allowed and will be handled in accordance with BSU's [academic integrity policy](#).

Students with Disabilities

The Disability Resources office is located on the ground floor of Maxwell Library. If you have a diagnosed disability which will make it difficult for you to carry out the course work, please contact me during the first two weeks of class to discuss reasonable accommodations.

Math Services

Math Services provides free tutoring on a walk-in basis. It is located in the basement of Maxwell Library.

*** This syllabus may be amended during the semester.**