



DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE

SPRING 2021
SYLLABUS

COURSE INFO:

Course Number:	MATH 2411.12
Course Title:	Introduction to Statistics
Credit Hours	3
CRN	22565

Required Text: Collaborative Statistics (Open Text) by Barbara Illowsky & Susan Dean., OpenStax College, 2012.
<https://openstax.org/details/books/introductory-statistics?Book%20details>

A [PDF version](#) of the textbook is also available in GaView(D2L).

Class Meeting (Day and Time): ONLINE class

Class Location: Virtual Class

INSTRUCTOR: Anilkumar Devarapu, PhD
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Office Phone: (229) 500-2281
OFFICE LOCATION: BCB, Room #116,

OFFICE HOURS: Mon,Tue,Wed and Thu: 10:00am – 12:30pm

Note: The easiest way to contact me is to send an email message. Please indicate “Intro to Statistics Student” in the subject line of your message.

Course Description:

Statistics is the science of conducting studies to collect, organizes, summarize, analyze and draw conclusions from data. Statistics finds applications in almost every field of endeavor. This course begins with an introduction to the main branches of statistics (descriptive and inferential); the basics of frequency distributions, graphs, and histograms are covered. Averages, variance, standard deviation, other measurements of variation and percentiles are also covered. The course will also cover sophisticated counting techniques, elementary probability, correlation and regression and hypothesis testing.

Course Objectives

Upon completion of the course, students will be able to demonstrate with 65% mastery or higher, the following knowledge-base competencies, and the professional skills and dispositions associated with the course. **Also, the students will be able to analyses the real world data using the computer based statistical software R.** Some of the areas include:

- To define and apply statistical terms
- Discuss descriptive and inferential statistics
- Define data , sample , random variables
- Discuss and define frequency distribution
- Discuss graphs of frequency distribution
- Discuss and define statistics and parameters of a population
- Discuss and define the distribution shape of graphs
- Discuss Chebyshev's Theorem and its applications
- Discuss Data Analysis and Percentiles
- Discuss counting principal and complex multiplication
- Define and discuss how to calculate the probabilities of independence and dependence events
- Define and discuss events and sample space
- Define and calculate the probabilities of events using normal and binomial distribution curves

Behavioristic Objectives

The students will be able to do the following:

1. Differentiate between two kinds of statistics
2. Perform several techniques of collecting data
3. Organize data into a frequency distribution and make interpretations
4. Measure and interpret the central tendency of various populations
(Calculate various parameters of a population)
5. Calculate the Z-score and percentile of the elements of a population
6. Complex counting using combination and permutation formulas
7. Calculate the probability of various kinds of events
8. Apply the properties of probability to calculate the probability of various kinds of events
9. Applications of the probability and Binomial distributions
10. Applications of the Standard Normal Distribution
11. Approximate the Binomial distribution using the Standard Normal-Distribution
12. Applications of the Central Limit Theorem
13. Calculate the confidence intervals of events and make interpretations
14. Use Chi- Square Distribution to make decisions about events
15. Do Hypothesis Testing and make decisions

Course Content

1. The Nature of Probability and Statistics
2. Frequency Distributions and Graphs
3. Data Description
4. Counting Techniques

5. Elementary Probability
 6. Probability Distributions
 7. The Normal Distribution
 8. Confidence Intervals
 9. Hypothesis Testing
 10. Correlation and Regression
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DESCRIPTION OF COURSE ASSESSMENTS: There will be four tests and a final exam. All five exams will have equal weight, and the weight allocated to the test will be 60% of the aggregate score of the course. There will be three Quizzes. These quizzes will have a weight of 35% towards the aggregate score of the course. Students' weekly discussion participation and performance will have a weight of 5% towards the aggregate score of the course. All students are expected to meet all the requirements of this course. Additional student obligations will be appended on this syllabus. Also, details concerning the dates and times for the exams will be announced in the class.

COURSE GRADING POLICY

Grades – Final Letter grades will be assigned as follows:

A= 90 - 100 B= 80 - 89 C = 70-79 D = 60 - 69 F = Below 60

CLASSROOM ATTENDANCE POLICY AND OTHER ESSENTIAL INFORMATION

Required Attendance Regulations: Class Attendance

"Attendance" and participation are required. You will be expected to participate in ongoing discussions of the lesson topics and to interact with other students and your instructor regularly. If for any reason you are unable to participate by the due dates listed in the course Calendar it is your responsibility to inform your instructor. Be sure to read and observe the procedures below.

In the online environment, problems associated with power outages, networks being down, and ISP troubles inevitably result in legitimate reasons for delays; however, you should still be prepared to deliver your work by the stated deadlines. If you have a problem, let your instructor know as soon as possible. Your instructor will determine if the seriousness of your problem warrants turning in an assignment late without penalty.

Logging into class without active participation as defined above does not count as weekly attendance. Assignments submitted in a week other than the one when the assignment is due will not count towards attendance for the previous week; participation must occur during the week attendance is counted. *Failure to complete the assignments and/or access the course for 5 consecutive weekdays (excluding holidays) may result in your being withdrawn from the course.* For additional information, refer to the [ASU Attendance Policy](#).

Late Policy:

I understand that life can interfere with the best of intentions and plans and that there may be an instance when you need some flexibility in meeting assignment deadlines. If you find that you cannot meet a deadline, please notify me immediately.

Late Homework: The homework is intended to prepare you to take the course exam covering the corresponding material. The late penalty for submitted a homework assignment after the due date is

- 1 point if the assignment is submitted prior to next exam.
- 2 points if the assignment is submitted after the next exam.

Late Writing Assignment: The course Writing Assignment is due on the last day of class and must be uploaded to the course Assignments folder. Early submission is encouraged; the Writing Assignment will not be accepted after the due date.

Late Exams: Exam 1 and Exam 2 may be taken after the dates indicated *only with prior approval from the instructor*, and a late penalty as indicated below will apply (which includes weekends).

- 10 points for submission one day late
- 20 points for submission two days late
- 20 *additional* points for each additional day

Writing is integral to teaching and learning in all disciplines. Writing in this course will be evaluated with rubrics established for the different online class activities. Writing activities in this course will be evaluated and may include in-class and out-of-class writing assignments and essay writing required on examinations. All written work must reflect good English composition.

ACADEMIC HONESTY:

Refer to the [ASU Handbook](#), page 62

Definitions and Examples

The examples and definitions given below are intended to clarify the standards by which academic honesty and academically honorable conduct are to be judged.

- Plagiarism
- Cheating on examinations
- Unauthorized Collaboration
- Falsification
- Multiple Submissions
- Evidence and Burden of Proof

The list is merely illustrative of the kinds of infractions that may occur, and it is not intended to be exhaustive. Moreover, the definitions and examples suggest conditions under which unacceptable behavior of the indicated types normally occurs. However, there may be unusual cases that fall outside these conditions that also will be judged unacceptable by the academic community.

Plagiarism

NOTE: Turnitin, a plagiarism detection system, is often used by ASU faculty members.

Plagiarism is presenting another person's work as one's own. Plagiarism includes any paraphrasing or summarizing of the works of another person without acknowledgment, including the submitting of another student's work as one's own. Plagiarism frequently involves a failure to acknowledge in the text, notes, or footnotes the quotation of the paragraphs, sentences, or even a few phrases written or spoken by someone else.

The submission of research or completed papers or projects by someone else is plagiarism, as is the unacknowledged use of research sources gathered by someone else when that use is specifically forbidden by the instructor. Failure to indicate the extent and nature of one's reliance on other sources is also a form of plagiarism.

Self-plagiarism is submitting your own work for multiple assignments or across multiple courses.

LIST ANY PLAGIARISM TYPES THAT MIGHT BE SPECIFIC TO THIS DISCIPLINE.

The student is responsible for understanding the legitimate use of sources, the appropriate ways of acknowledging academic, scholarly, or creative indebtedness, and the consequences of violating this responsibility.

Cheating on Examinations

Cheating on examinations involves giving or receiving unauthorized help before, during, or after an examination. Examples of unauthorized help include the use of notes, texts, "crib sheets," websites, electronic documents or notes, and computer programs during an examination (unless specifically approved by the instructor), or sharing information with another student during an examination (unless specifically approved by the instructor). Other examples include intentionally allowing another student to view one's own examination and forbidden collaboration before or after an examination.

Unauthorized Collaboration

Submission for academic credit of a work product, developed in substantial collaboration with other person or source but represented as one's own effort, is unauthorized. Seeking and providing such assistance is a violation of academic honesty. However collaborative work specifically authorized by an instructor is allowed.

Falsification

It is a violation of academic honesty to misrepresent material or fabricate information in an academic exercise, assignment or proceeding. Some examples of falsification are:

- false or misleading citation of sources
- the falsification of the results of experiments or of computer data
- false or misleading information in an academic context in order to gain an unfair advantage.

Multiple Submissions

It is a violation of academic honesty to submit substantial portions of the same work for credit more than once without the explicit consent of the instructor(s) to whom the material is submitted for additional credit. In cases in which there is a natural development of research or knowledge in a sequence of courses, use of prior work may be desirable, or required. However, the student is responsible for indicating in writing, that the current work submitted for credit is cumulative in nature.

Evidence and Burden of Proof

In determining whether or not academic dishonesty has occurred, guilt must be proven by a preponderance of the evidence. This means that if the evidence that academic dishonesty occurred produces a stronger impression and is more convincing compared to opposing evidence, then academic dishonesty has been proven. In other words, the evidence does not have to be enough to free the mind from a reasonable doubt but must be sufficient to incline a reasonable and impartial mind to one side of the issue rather than to the other. Evidence as used in this statement can be any observation, admission, statement, or document that would either directly or circumstantially indicate that academic dishonesty has occurred. Electronic means may be used to monitor student work for the inappropriate use of the work of others.

Students with Disabilities:

If you are a student with a disability, you should consult with the [*Insert information about Office for Students with Disabilities*] to identify which accommodations might be needed for this course. Please contact the course instructor as soon as possible to discuss your needs. Assignments/exams prior to receiving disability approval cannot be covered by the disability decision.

***NOTE:** “ASU RAMmail account is the university’s official means of electronic communication with students. Students are required to use the ASU website (www.asurams.edu) and RAMmail for important university’s official information on financial aid, current class schedule, registration holds, account balances, etc. In order to communicate with students by other means as needed, each student is required to provide the university with his/her current telephone number(s) and mailing address via BannerWeb.”

Integration of Technology

The use of technology is integral to the course design. You should have access to a computer (e.g., computer lab, library, home, or work), a general knowledge of the operation and care of a computer, and know some basic troubleshooting techniques. You should also have some basic understanding of how to use the Internet to seek, find, and retrieve information.

Additionally, you must have a workable (functioning) ASU e-mail account, know how to send and retrieve e-mail messages with and without an attached file, know how to attach a file to an e-mail message, and how to download and open attached files. To ensure that you receive timely communications, it is your responsibility to notify the professor immediately if there are any changes to your e-mail address.

Changes in the schedule will be posted on ***Desire2Learn***. It is your responsibility to make sure you are aware of all updates.

TENTATIVE CLASS CALENDAR/SCHEDULE

SPRING 2021 TUESDAY/THURSDAY CLASS		
Dates	Assignments	
	Tuesday	Thursday
Week 1 January 12, & January 14	Chapter 1: Sampling and Data Introduction 1.1: Definitions of Statistics, Probability, and Key term	1.2 Data, Sampling, and Variation 1.3. Frequency Tables and levels measurement
Week 2: January 19, & January 21	1.3. Frequency Tables and levels measurement 1.4: Experiments Design and Ethics	1.4: Experiments Design and Ethics 1.5: Data Collection Experiment 1.6: Sampling Experiment
Week 3: January 26 & January 28	1 Chapter 2: Descriptive Statistics 2.1: Stem-and-Leaf, Line and Bar Graphs 2.2: Histograms, Frequency Polygons	2.2: Histograms, Frequency Polygons, and Time Series Graphs
Week 4 : February 2, and February 4	2.3: Measures of the Location of the Data	2.5. : Measures of Center of the Data.
Week 5: February 9, and February 11	Test 1	2.6.: Skewness and the Mean, Median and Mode
Week 6: February 16, and February 18	2.7: Measures of the Spread of the Data	2.8: Descriptive Statistics
Week 7: February 23, and February 20	Instructional Day Off	2.8: Descriptive Statistics
Week 8: : March 2, and March 4	2.4: Box Plots	Test 2
Week 9: March 9, and March 11	3.1: Probability Terminology	3.2.: Independent and Mutually Exclusive Events
Week 10: March 16, and March 18	3.3: Two basic rules of Probability	3.4.: Contingency Tables
Week 11: March 23, and March 25	3.5.: Tree and Venn Diagrams 3.6. Probability Topics	Chapter 4. Discrete Random Variables 4.1: Probability Distribution Function
Week 12: March 30, and April 1	4.2 Mean or Expected Value and Standard Deviation 4.3: The Binomial Distribution 4.5: Poisson Distribution	
Week 13: April 6, and April 8	Chapter 6: The Normal Distribution 6.1: The Standard Normal Distributions 6.2: Applications of the Normal Distribution	Chapter 7. The Central Limit Theorem 7.1: The Central Limit Theorem for Sample Means and Sums 7.2.: Central Limit Theorem Applications
Week 14: April 13, and April 15	Test 3	Instructional Day Off
Week 15: April 20, and April 22	7.4: The Normal Approximation to Binomial Distribution	Chapter 8: Confidence Intervals 8.1: Confidence Interval for the Mean when sigma is known
Week 16: April 27, and April 29	8.2: Confidence Interval for the Mean when sigma is unknown	8.3: Confidence Intervals and Sample Size for Proportions
May 3-6	Final Examinations for end of term for all students	