

MNA 60320: Decision Analysis & Statistics

Course Syllabus, Spring 2021

Instructor: Dr. Jennifer Waddell
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Course Meetings: MW, 3:00 – 4:45pm
Office Hours: T/Th 2:50 – 4:30, **Zoom appts.**
(Book at least 30 minutes in advance)

Teaching Assistant

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Office Hours: Times posted on Sakai

Course Description

Statistics is a scientific discipline dealing with the collection, description, analysis, interpretation and presentation of data. In this course, not only do students learn about the fundamental concepts and methods behind various statistical analyses, they also gain and develop the process of using data and statistical methods to make evidence-based decisions. Most of the statistical analyses will be implemented using Microsoft Excel.

Course Goals

The overarching goal of this course is to develop students' capabilities of analyzing and interpreting data for effective decision-making. Through hands-on experience of performing statistical analyses and building models, this course enables students to:

- organize, interpret, and present key statistics from data;
- conduct appropriate statistical analyses to reach and articulate informed decisions;
- make sound inferences about a population from sample data results; and
- apply inferential statistics to make evidence based decisions.

Course Objectives

Upon the successful completion of the course, students will be able to:

- understand and differentiate between levels of measurements;
- effectively summarize and describe data using appropriate descriptive statistics and graphs;
- draw conclusions about the probability of events from an experiment;
- use sampling distribution to describe probability of a statistic obtained from a sample;
- statistically evaluate a population mean based on a sample taken from the population;
- effectively use linear relationships between variables to make inference and predictions; and
- effectively use Microsoft Excel to implement statistical analyses taught in this course.

Required Materials

- MindTap access to Anderson, Sweeney, Williams, Camm, Cochran, Fry, & Ohlmann. (2020). *Essentials of Modern Business Statistics with Microsoft Excel* (8th edition) by Cengage Learning
 - Two bookstore options exist for this requirement:
 - Bundle Option: students get a loose-leaf version of the textbook along with access to MindTap for this book title as well as a complete ebook.
 - MindTap and ebook access via Cengage Unlimited. This option also gives you access not only to what you will need for this course, but also all of Cengage’s digital offerings in their catalog (over 20,000 titles and study tools). With Cengage Unlimited, you can keep up to 6 texts on your digital shelf at once and swap them out whenever you’d like. Students have the option to “rent” a printed version of the textbook for an additional \$7.99, but textbook return is required at the end of the course.
 - One additional (**generally cheaper**) option for this requirement:
 - Purchase access to Cengage Unlimited from the Cengage website. Go to cengage.com/unlimited/ if you would like to evaluate this option. A 4 month subscription should be sufficient unless you know that a class you are taking in a future semester will be using Cengage digital software or you wish to have access to other digital titles for a longer period of time.
- Personal computer or laptop with Microsoft Excel 2016, 2019 or 365 installed.
 - MindTap offers students the option of downloading Office 365 Educator for free.
 - Notre Dame offers students free copies of Office products; follow this [link](#), (or <https://oit.nd.edu/services/software/software-downloads/microsoft-office-for-students/>)
 - Notre Dame’s virtual computer lab: the virtual computer lab gives you access to software applications typically used in a Notre Dame computer lab. The virtual computer lab works on any computer (Chromebooks, Macs, and Windows) and from any browser window. [This article](#) provides you with instructions on how to access a virtual computer lab at Notre Dame.
- Basic calculator
 - The following functions are the minimum requirements for a pocket calculator used in this course: addition, subtraction, multiplication, division, and a square root key. An inexpensive scientific calculator (\$10–\$20) will do. Calculators on computers will work so long as you can perform the aforementioned functions.

Sakai

All essential materials, web links, announcements and information for this class will be hosted on Sakai. Students can consider Sakai a repository for all information pertaining to this class.

MindTap Homework/Tutorials/Practice Assignments

Homework assignments are opportunities for you to practice material and advance your understanding in preparation for exams. Assignments counting for class credit can be found in the Chapter Review and Assignments section and are marked as “COUNTS TOWARDS GRADE.” Other practice problems, video lessons, and applets are available for you to use as you study and learn the material, but completion of these activities will not be counted toward your grade.

Assignments will incorporate by hand work, Excel manipulation, and evaluation of statistical information. Therefore, each assignment may need a good deal of time to complete. MindTap provides a suggested amount of time per end-of-chapter assignment that it thinks it should take the typical student to complete. It may take you more or less time to complete the assignment based on your preparation level. However, you can use this as a rough gauge regarding how much time might be needed for an assignment.

You may work with other students on the homework problems. You may also consult with our TA or me for help solving a problem.

Questions on assignments have an unlimited number of “check my work” chances per question. While working through a problem, you can submit the answers you have generated to see if they are correct. Answers with a green checkmark are correct; answers with a red x need to be reevaluated.

Late penalty: Assignments all have a due date and time associated with them. If you do not complete an assignment before the due date and time, you will have two additional days to get it done, but you will be assessed a 15% penalty on the value of the assignment. This is a flat deduction and not prorated based on the amount of points you have earned to that point. Thus, even if you complete it without error, your highest score on the assignment will be 85%. If you do not complete it within the 2 day grace period, the assignment window will close, and you will earn whatever points you have attempted at that time on the assignment.

MindTap starts the penalty window 1 second past the official due date and time. If your computer’s clock is not set to official time, it would be best if you did not wait until the very last second to submit your work. Make note of the due dates and times of all assignments so you can keep on top of completion for full credit.

Mini Project

To fully understand and appreciate the content of this course, students will work in teams on a given dataset, perform analyses, and write up a short 2-3 page results summary. Additional pages can be added if data visualizations are included with the project. Groups can have 4 or 5 students each. Separate information pertaining the mini-project will be disseminated later in the course.

There will be several mini-paper “check-in” opportunities throughout the term. These will be submitted either to Sakai or via Google form to provide some information regarding the progress of your team to that point in time. Each check-in submission will be worth points toward your overall mini-project grade, and late check-in submissions will not be accepted. Only one check-in submission per group is needed, and check-ins should only take a few moments of your time.

Examinations

There will be two exams in this course. Exams are based on assigned readings, homework, practice problems, data analysis output and interpretation, and lecture material. The format of the exams varies, but usually exams have theoretical multiple choice questions, short computation problems, and short answer questions.

Material in this course continues to build upon itself, and therefore, material you covered early in the semester will be conceptually relevant to what you do later in the course. However, the **bulk** of your responsibility on the final exam will be related to material learned after the midterm exam.

Important points about taking exams:

1. Students are allowed to use a help sheet, one standard (8.5 x 11) piece of paper with notes on each side for each assessment (not a photocopy of or someone else's help sheet). This is the only resource allowed; if you do not write something down on the help sheet, I will not provide it to you during the exam period. The help sheet may contain ***only personally handwritten notes***; no material may be computer generated or otherwise attached to the help sheet. Each help sheet will be handed in with the assessment. If the help sheet you turn in was not written by you **or** you neglect to turn in the one you used with your assessment, there will be a 10-point penalty.
2. Sometimes I will ask to see your work for a problem. Without accompanying problem set-up and intermediate calculations, under ***no*** circumstances will the result from your calculator alone earn you any credit on exam problems. This is non-negotiable.

Grading Policy

Your final grade will be calculated according to the following table:

Assessment	Contribution
Homework	15%
Mini Project	15%
In Class Assignment	15%
Midterm Exam	25%
Final Exam	30%
Total	100%

Weighted grade calculations can be found in the Gradebook section on MindTap.

Due to the Mendoza College of Business requirement that the final Grade Point Average for this course must be between 3.3 and 3.6 (see the MCOB Graduate Academic Code), whatever scale ultimately gets used to map the numeric scores onto letter grades will not be changed once it is set. Final grades are not negotiable, and final grades will not be changed once assigned (unless a clear grading mistake has been made).

Academic Accommodations

It is University policy to make reasonable academic accommodations for qualified individuals with disabilities, and I am a strong supporter of this policy. However, registration with the Office of Disability Services is required to receive accommodations in this course (no exceptions!). If you have not registered with the Office of Disability Services, please contact the coordinator as soon as possible.

Additional information about Sara Bea Disability Services and the process for requesting accommodations can be found at sarabeadisabilityservices.nd.edu.

Support for Student Mental Health at Notre Dame

Care and Wellness Consultants provide support and resources to students who are experiencing stressful or difficult situations that may be interfering with academic progress. Through Care and Wellness Consultants, students can be referred to The University Counseling Center (for cost-free and confidential psychological and psychiatric services from licensed professionals), University Health Services (which provides primary care, psychiatric services, case management, and a pharmacy), and The McDonald Center for Student Well Being (for problems with sleep, stress, and substance use). Visit care.nd.edu.

Academic Regulations and Integrity

Violations of academic integrity will not be tolerated and go against the University of Notre Dame Honor Code. Examples of academic dishonesty include (but are not limited to) the following: cheating on exams, plagiarizing another person's work, handing in someone else's work as your own, or arranging for other people to do your work for you. If you have questions about the limits of the academic integrity policy in specific circumstances, please ask me *before* you proceed with an action. Please recall that you are all bound to abide by the University of Notre Dame Honor Code, and the Honor Code states that, *"As a member of the Notre Dame community, I acknowledge that it is my responsibility to learn and abide by principles of intellectual honesty and academic integrity, and therefore I will not participate in or tolerate academic dishonesty."*

Health and Safety Protocols

In this class, as elsewhere on campus, students must comply with all University health and safety protocols, including:

- Face masks that completely cover the nose and mouth will be worn by all students and instructors;
- Physical distancing will be maintained in all instructional spaces;
- Students will sit in assigned seats throughout the semester, which will be documented by instructor for purposes of any needed contact tracing; and
- Protocols for staged entry to and exit from classrooms and instructional spaces will be followed.

We are part of a community of learning in which compassionate care for one another is part of our spiritual and social charter. Consequently, compliance with these protocols is an expectation for everyone enrolled in this course. If a student refuses to comply with the University's health and safety protocols, the student must leave the classroom and will earn an unexcused absence for the class period and any associated assignments/assessments for the day. Persistent deviation from expected health and safety guidelines may be considered a violation of the University's "[Standards of Conduct](#), as articulated [in du Lac: A Guide for Student Life](#), and will be referred accordingly.

Course Schedule

Dates and topics may change depending on the needs of the class or any unexpected events.

- Readings should be completed before class on the assigned day.
- Go to MindTap (MT) for homework. Homework assignments are due by 11:59pm Eastern time on the date shown.
- Mini-paper checkpoints will be submitted to Sakai or via Google form. They are due by 11:55pm Eastern time on the date shown.

Week	Day & Date	Topic	Reading	Assignment Due
1	M, Feb 1	Course Introduction Introduction to Excel	Excel videos on Sakai (for review purposes)	
	W, Feb 3	Data Types; Tables & Graphs	Ch 1 (1.1 – 1.7) Ch 2 (2.1 – 2.4)	
2	M, Feb 8	Descriptive Statistics	Ch 3 (3.1 – 3.4)	MT: Chapters 1 & 2
	W, Feb 10	Random Variables; Discrete Probabilities	Ch 4 (4.1– 4.4 (but not counting rules, permutations, or combinations in 4.1)) Ch 5 (5.1 – 5.3)	MT: Chapter 3 Mini-paper Checkpoint 1
3	M, Feb 15	Continuous Probability Distributions	Ch 6 (6.2)	MT: Chapter 4
	W, Feb 17	Sampling Distributions	Ch 7 (7.2 (but not the book’s Excel method for choosing a random sample), 7.3 – 7.6	MT: Chapters 5 & 6
4	M, Feb 22	Interval Estimation	Ch 8 (8.1 – 8.2)	MT: Chapter 7
	W, Feb 24	In Class Assignment Exam Review		MT: Chapter 8 Mini-paper Checkpoint 2
5	M, March 1	Midterm Exam		
	W, March 3	Hypothesis Testing I		
6	M, March 8	Hypothesis Testing II: Inference about a Population		
	W, March 10	Concepts & Application of Regression		MT: Chapter 9
7	M, March 15	Multiple Regression & Exam Review		MT: Chapter 14 Mini-paper Checkpoint 3
	Tues, March 16			Mini-paper DUE on Sakai by 11:55pm
	Thursday, March 18	Final Exam		