

University of Notre Dame
MSA 70128 – Spring 2024
Spreadsheet Analytics & Statistics

I. Professor

Professor: Jeff Burks

Office Location: Mendoza 279

Office Hours: Most any time by advanced notice, or drop in Monday/Wednesday 3:45-4:45 pm

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II. Course Materials

Text: Business Analytics: Data Analysis and Decision Making, Albright and Winston. 7th Edition, Cengage Learning, 2020.

Purchase, rent, and ebook options are available. The official publisher website is <https://www.cengage.com/shop/isbn/9780357109953> but there may be cheaper options elsewhere online and perhaps at the bookstore. You do not need to buy the “MindTap” on the publisher’s website.

Note: The purchase, rent, and ebook options allow you to download a student version of the Palisade DecisionTools Suite to your own PC (found on the Student Companion Site for the textbook). This software is crucial for the course. However, the student version is not powerful enough for some course assignments, and Apple computers have had difficulty running the student version. The fully functional Palisade software can be accessed at Mendoza computer labs either in-person or remotely.

Library Reserves: Articles are available electronically through the Library Reserves tool in Canvas (canvas.nd.edu) for the SP24-MSA-70128 course. These readings serve as the basis for quizzes and classroom discussion or exercises.

Recommended:

Subscription to *The Wall Street Journal*. Student subscriptions can be usually be purchased for around \$2 per month. Google “Wall Street Journal student”.

III. Course Learning Objectives

- Students will be able to think systematically about difficult managerial decisions, using ideas and/or analytical tools from statistics, economics, and cognitive psychology. (MSA learning goal: Problem Solving)

- Students will be able to identify relevant information to support decisions that involve uncertainty and risk. This course focuses on how analytics can be used to support decisions in accounting and business. (MSA learning goal: Information management and analysis)
- Students will learn how to conduct statistical and visual analyses using Microsoft Excel, Power Query, PrecisionTree, @Risk, and Tableau. (MSA learning goal: Information management and analysis)
- Students will develop a better understanding of the decision usefulness of accounting measures. (MSA learning goal: Problem Solving)
- Students will be able to understand and evaluate valuation models. (MSA learning goal: Problem Solving)
- Students will consider the ethical dimensions of business decisions and the role of technology, information, and empiricism in human development. (MSA learning goal: Ethics/Professionalism)
- Students will improve their oral and written communication skills. This is accomplished through daily participation and several assignments that require them to analyze or research questions and provide written feedback. (MSA learning goal: Communication)

IV. Prerequisites

Students should be familiar with basic concepts of probability and statistics and with basic use of Microsoft Excel.

V. Grading

The course grade will be determined by the total score on the following items:

Major Assignments (4)	160
Minor Assignments (2)	30
Midterm Examination	120
Final Examination	180
Participation/Attendance/Professionalism	50
Quizzes*	<u>100</u>
TOTAL POINTS	640

* For convenience, each quiz question generally will be assigned a face value of one point. Normally a quiz will have three questions and thus will be worth three face value points. To compute the quiz component of the overall course grade, the *percentage* of face value points you

earn will be multiplied by 100. At the end of the semester, each student's **three** lowest quiz scores will be dropped.¹

Final grades will be set to achieve an average GPA between 3.3 and 3.6, consistent with Accountancy Department requirements.

VI. Course Organization & Administration

Preparation and daily effort. Read, think about, and prepare to discuss the assigned readings before class. It is also a good idea to read, think about, and even attempt the problems before class. This exposure to the material will help you follow the lecture, participate in discussion, improve your long-term retention of the material, and reduce preparation time and effort for exams.

Most every **article reading** has a quiz on Canvas that must be completed before class (due by 10:45 AM on the day of class). Make sure to read the article thoroughly before logging into the Canvas quiz because most Canvas quizzes have a time limit of 5 minutes once you log in. Quizzes over articles are *individual* (not group) tasks.

For quizzes over **homework problems**, first complete the problem in Excel. Then submit your answers by taking the multiple-choice quiz associated with that problem on Canvas (due by 10:45 AM on the due date listed in the syllabus). Make sure to complete the problem before logging into the Canvas quiz because most Canvas quizzes have a time limit of 5 minutes once you log in. You may work on the problems with up to two classmates, but the work must be truly collaborative and not just one person free-riding on another. *Furthermore, the quizzes themselves must be taken individually.* In other words, once one person has logged into the quiz, no collaboration or communication about the problem or quiz is allowed until all collaborators have taken the quiz.

Attendance, Participation, and Professionalism. 50 course points are allocated to attendance, participation, and professionalism. Students are expected to attend every class. Please send me an email prior to any class that you cannot attend.

Part of professionalism is arriving to class on time and being attentive to what we are doing in class. Just as coming in late disrupts class, so does leaving during class for a "break." Please be considerate of your classmates during instructional time and leave the room only in the rare event of a personal emergency. Most every class session will have a 5 minute break in the middle.

Phones and other electronic devices must be **stowed away** during class (in a bag, coat, etc.). *They may not be kept on the desk, keyboard tray, etc.* Similarly, on the classroom computers you may not browse the web or work on things unrelated to class.

¹ A few quizzes are worth more than three face value points. Dropping these quizzes uses up more than one drop. For example, dropping a nine-point quiz uses up three drops.

Participation. It is important to develop the ability to form and respond to questions in the presence of peers. Students who receive high participation grades prepare well, demonstrate logical thinking, and make meaningful comments during class. Students who receive low participation grades come to class unprepared, make few comments, and do not respond when called upon.

Processes. The course is organized around two 110-minute sessions per week which consist of lecture, demonstration of applications, and discussion of assigned readings, problems, and cases.

Exams. There will be one midterm based on the material covered in sessions 1-5, and one final exam largely based on the material covered in sessions 7-13.

VII. Honor Code

You are responsible to uphold the Mendoza College of Business Graduate Academic Honor Code (see [Academic and Honor Codes](#)). Perhaps the most fundamental sentence is the beginning of section 4.2:

“The pledge to uphold the Honor Code includes an understanding that a student’s submitted work (examinations, draft copies, papers, homework assignments, etc.) must be his or her own.”

Materials and answers related to exams, quizzes, and assignments from prior semesters or the undergraduate course may not be used by students in the current semester.

AI composition software (like ChatGPT) may not be used for any coursework.

Using live class recordings and other course materials

If class meetings are recorded, the University strictly prohibits anyone from duplicating, downloading, or sharing live class recordings with anyone outside of this course, for any reason. The same goes for all other course materials.

VIII. Course Schedule

A course schedule follows. Quizzes and assignments must be turned in via Canvas by **10:45 am** on the day listed. Quizzes and assignments are listed in two columns on the following schedule: the 4th column and last column.

Weekday Masses at convenient locations

- 8:00 am, usually less than 30 minutes, Stinson-Remick chapel (across the quad from Mendoza)
- 11:30 am and 5:15 pm, usually 35-40 minutes, Basilica of the Sacred Heart (Sacrament of Reconciliation is offered in the 30 minutes before Mass)
- 12:05 pm, usually less than 30 minutes, St. Matthew's Chapel in the Stayer Center (next to Mendoza)

Support for students facing planned or unplanned pregnancy: Notre Dame is committed to providing pregnant students with caring and non-judgmental [professional assistance and support](#). If you or someone you know could use this support, I would be happy to listen, help, or connect you with University support.

Session	Date	Topic	Readings and Reading Quizzes Due (all non-textbook readings are in Library Reserves unless stated otherwise)	In-class Problems	Problem Quizzes Due and Other Homework
1	1-16	Introduction	Chapter 2 (p 73-76) – Filter	Adaptation of P2-35	
2	1-18	Wrangling data: Cleaning, Pivot tables, Filters, and Merging	Chapter 3 (p 106-111) – Pivot Tables An Amazon Manager Who Stole...(Quiz)	Vendor file.xls Employee_deposits.xls Accounts Receivable Audit.xls, parts 1 and 2	
3	1-23	Technology, Information, and Catholic Social Teaching Wrangling data: Cleaning, Pivot Tables, Filters, and Merging	1. Introduction–Against the gods 2. Technology, Information, and Catholic Social Teaching (found in Session 2 folder on Canvas) 3. An IMA member Shares His XBRL Filing Experience (Quiz) (also briefly consult https://www.xbrl.org/ for background on XBRL if needed) <i>Take combined essay quiz over readings #1 and #2 prior to class (go to Canvas Assignments). Because of the effort involved relative to a normal quiz, this quiz will be triple-weighted.</i> Writing prompt: Write two paragraphs comparing and contrasting the views expressed in the "Against the gods" reading with those expressed in the reading on Catholic Social Teaching. You might focus on the themes of technology, information, empiricism, man's relationship with nature, or human development. Do not try to cover all of the themes. Focus on a couple of particular points of similarity or difference.	Accounts Receivable Audit.xls, part 3 XBRL data.xls Extra credit: ESG funds.xls	Student Info (see survey under Canvas Quizzes) Adaptation of Problem 2-37.doc (see Session 1 folder) <i>Filter in place and mark records with 1's as shown in class.</i> Start House Limit individual assignment (Canvas Assignments)

4	1-25	Decision Trees – The Value of Information	Chapter 6 (p 242-262) - Decision Trees Chapter 6 (p 262-265)-Bayes Rule Chapter 6 (p 265-270)-Information Value	Auto Insurance.xls Landowner.xls	Register on Tableau website (http://www.tableau.com/academic/students) in preparation for Session 5. Start Value of Information assignment (Canvas Assignments)
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5	1-30	Data Visualization: Tableau and conditional formatting in Excel Power Query	Before class: 1. Register on Tableau website (http://www.tableau.com/academic/students). 2. Watch the “Getting Started” videos (under Resources – Learn Tableau – Free Training Videos – Getting Started). The videos will take about 20 minutes to watch in total. You can just watch carefully; you do not have to do the steps yourself. 3. Re-familiarize yourself with the solution files for Employee_Deposits.xls (parts 1 and 2) and Accounts Receivable Audit.xls (part 3). The solution files can be found in the Session 2 and 3 folders. We will use Tableau to redo these parts in class.	Employee_Deposits.xls Accounts Receivable Audit.xls	House Limit individual assignment (Canvas Assignments) Television Network (Session 7) <i>No Canvas quiz over this. Instead do it to help prepare for “Bayes Rule” quiz.</i> Bayes’ Rule Quiz (worth 3X a normal quiz, 25 minute time limit, open book/note) <i>When you open the quiz you will see a scenario similar to the “Landowner” and “Television Network” cases. For this scenario, use Bayes Rule to derive the probabilities needed for a “Value of Information” decision tree. Ignore the “username” and “password” on the first screen.</i> Start House Limit Using Power Query minor assignment (Canvas Assignments) Start Fixed Asset Reconciliation assignment (Canvas Assignments)
6	2-1	Midterm exam	Covers Sessions 1-4. No Tableau.		

7	2-6	Hypothesis Testing	Chapter 5 (p 200-203, 205-206) - Normal Distribution Chapter 9 (p 368-377) - Hypothesis Testing	P5-20 (p 213) Commute Time Accounts Receivable Audit.xls, Part 5 (Note: Part 4 is not covered as part of this course)	House Limit Using Power Query minor assignment (Canvas Assignments) <i>Extra credit:</i> ESG funds.xls (Good for an additional quiz drop. Get data from Session 3 folder)
8	2-8	Linear Relationships and Regression	Chapter 3 (p. 101-103) –Correlation and covariance Chapter 10 (p 412-417, 424-429, 432-433) - Regression Chapter 10 (p 435-438, 442-448) -Control for other variables Chapter 11 (p 472-481) – Inferences about regression coefficients Freakonomics (Quiz)	House.xls P60 Adaptation.xls	Problem 9-3 (p 379) <i>Get data in Session 7 folder.</i> Value of Information assignment (Canvas Assignments)
9	2-13	Regression application: Role of Accruals in Predicting Cash Flows	Barth, Cram, and Nelson (2001), p. 27-36, 41-43 (Quiz) Note: This is a challenging reading. It will be explained in class over the next two class periods. Treat the reading as an opportunity to get some preliminary exposure to the model before it is explained in class.	Accruals_template.xls	Problem 10-27 (p. 462) <i>Get data in Session 8 folder. Do parts a through f but ignore the questions about “accuracy” in parts e and f.</i>

10	2-15	Regression application: Role of Accruals in Predicting Cash Flows		Pricing Honda Pilots.xls	Fixed Asset Reconciliation assignment (Canvas Assignments) Start Fixed Asset Reconciliation Using Power Query minor assignment (Canvas Assignments) Start Regression and Depreciation assignment (Canvas Assignments)
11	2-20	Option Valuation Models: Black-Scholes and Lattice	How to “Excel” at Options Valuation (Quiz)	OptionValuationMethods.xls Sample Distributions.xls	
12	2-22	Option Valuation Models: Monte Carlo	Chapter 15 (p 717-734) – Distributions Public Pension Deficits are Worse than You Think (Quiz) Odds-On Imperfection (Quiz)	OptionValuationMethods-Amazon.xls Public Pension Deficits.xls Your Financial Plan.xls	Fixed Asset Reconciliation Using Power Query minor assignment (Canvas Assignments) <i>Due Friday, 2/23 5:00 pm.</i>
13	2-27	Simulation and @Risk Simulating the Central Limit Theorem	Using Excel and Benford’s Law to Detect Fraud (Quiz) Mindle 3: Combinations of Uncertain Numbers (Quiz)	P16-19 (p. 809) Benfords law.xls CentLimT2.xls Extra practice: Quantitative Investing.xls P16-41 (p 829)	Regression and Depreciation assignment (Canvas Assignments) Option Valuation.xls (do your work in the spreadsheet found in the Session 12 folder before clicking the quiz link)

		Final Exam Sometime between 2/28 and 3/1	Mostly covers sessions 7 through 13, although you should be familiar with pivot tables, lookups, and advanced filters. Decision tree material will pertain only to the lattice option model (no “value of information”). No Tableau.		
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