

Dr. Tristan Whalen

OPRE 3360.002 Fall 2022

Managerial Methods in Decision Making under Uncertainty, a.k.a. "Business Stats"

The country is hungry for information; everything of a statistical character, or even a statistical appearance, is taken up with an eagerness that is almost pathetic; the community have not yet learned to be half skeptical and critical enough in respect to such statements.

—General Francis A. Walker, Superintendent of the 1870 census
(Quoted in Freedman, Pisani, and Purves *Statistics*, 4ed)

INSTRUCTOR EMAIL & OFFICE

Dr. Tristan Whalen tristan.whalen@utdallas.edu JSOM 3.420

I encourage you to email me throughout the semester with questions or concerns about the class. Please include **3360.002** in every email to me.

My Fall 2022 office hours at JSOM 3.420

Monday 1:00pm to 3:45pm

Tuesday, Thursday, Friday: 11:30am to 12:45pm

No appointment needed; just come by during a listed time. No office hours on holidays.

CLASSROOM LOCATION & TIMES

JSOM 2.106 Tuesdays and Thursdays, 1:00pm to 2:15pm

Class meetings will consist of lecture, examples, and discussion. Most homework and exam materials are based on what we cover in class, so regular attendance and participation are expected.

CALENDAR & HOLIDAYS

Last day of classes: Thursday, Dec 8 Withdrawal dates: Sept 7 (without a W), Nov 8

Labor Day: Monday, Sept 5 Fall Break: Monday, Nov 21 to Wednesday, Nov 23

Thanksgiving Break: Thursday, Nov 24 to Sunday, Nov 27

TA: Zihan Wang zzw210019@utdallas.edu

COURSE MATERIAL, TEXTBOOKS & SOFTWARE

>Microsoft Excel

>Handheld calculator (graphing, statistics, or better) for in-class exams

>The course textbook is *Modern Business Statistics*, by Anderson, Sweeney, Williams, Camm, Cochran, Fry, and Ohlmann, 7th edition. The text is recommended for extra examples, practice exercises, and review problems, as well as to supplement in-class lectures. The text is not required. The primary material is what we cover in class together and practice in the homework.

>My favorite statistics book that I recommend to anyone learning these topics is *Statistics*, by Freedman, Pisani, and Purves, 4th edition.

SCHEDULE OF TOPICS

“Education never ends, Watson. It is a series of lessons with the greatest for the last.”

—Sherlock Holmes (from Arthur Conan Doyle’s *The Red Circle*)

>Dates listed are the Monday at the beginning of the week.

>Chapters and sections refer to course text *Modern Business Statistics*.

>Regarding assignments, only the two in-class exams are listed here. Online homework will be due every week or two. Elearning announcement emails will notify you in advance of their due dates.

MODULE 1: Descriptive Statistics *Don’t bother me with details. Cut to the charts!*

Week 1	Syllabus and course overview
Aug 22	[1.1-1.9] Introduction to statistical methods, types of data, summarizing data
Week 2	[2.2, 2.4] Histograms and scatterplots
Aug 29	[3.1-3.3, 3.5] Measures of center, spread, and association

MODULE 2: Probability *Why talk about cards and dice in a business course? Find out!*

Week 3	[4.1-4.3] Fundamentals of Probability
Sept 5	[4.4-4.5] Conditional probability and Bayes’ Theorem
Week 4	[5.1-5.3] Discrete probability distributions
Sept 12	[5.5-5.7] Binomial, Poisson, and Hypergeometric distributions
Week 5	[6.1,6.3] Continuous probability distributions
Sept 19	[6.2] Normal distributions
Week 6	[7.1-7.3] Sampling and point estimates
Sept 26	[7.4-7.8] Sampling distributions and error

CLASS EXAM 1: Selected topics from Ch.1-7 *A glorious gauntlet. Come prepared!*

Week 7	Tuesday Oct 4: catch up and review
	Thursday Oct 6: exam in class – bring scantron, calculator, pencil, CometCard

MODULE 3: Statistical Inference *Sherlock Holmes' favorite.*

Week 8	[8.1-8.2] Margin of error for an unknown average
Oct 10	[8.4] Margin of error for an unknown proportion
Week 9	[8.3, 8.5] Concepts and comments on confidence intervals
Oct 17	[9.1-9.2] Testing a null hypothesis
Week 10	[9.3-9.5] z-tests and t -tests
Oct 24	[9.6] interpreting P -values

CLASS EXAM 2: Selected topics from Ch.1-9 *An even more glorious gauntlet. Be vigilant!*

Week 11	Tuesday Nov 1: catch up and review
	Thursday Nov 3: exam in class – bring scantron, calculator, pencil, CometCard

MODULE 4: Analysis of Variance (ANOVA) *Sounds fancy!*

Week 12	[13.1-13.2] Test of equality of means with F -distributions
Nov 7	[13.3] Pairwise comparisons of averages (Fisher's Least Significant Difference)
Week 13	[13.4] Randomized blocks
Nov 14	[13.5] Factorial experiments

THANKSGIVING BREAK

Week 14	No classes Monday November 21 through Sunday November 27
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MODULE 5: Regression *All models are wrong, but some are useful.* -George Box, statistician

Week 15	[14, selected sections] Simple linear regression
Nov 28	
Week 16	[15, selected sections] Multiple regression
Dec 5	

ONLINE EXAM 3: Saturday, December 10, in elearning, from home

**Dates are tentative and may be adjusted if necessary.*

"HOW TO STUDY MATH: Don't just read it. Fight it!"

—Paul Halmos

COURSEBOOK DESCRIPTION

This course focuses on the concept of probability and statistics for managerial decision making. Concepts will be developed in lecture and exercises using software packages. Topics include: summarizing and presenting data, probability theory, sampling, estimation, confidence intervals, hypothesis testing, regression, and ANOVA.

COMMENTS

>Active participation is expected from every student. Class sessions will consist primarily of lectures, with some discussions and in-class exercises as appropriate to the covered topic.

>This is not an Excel course. We will use Excel as needed, but the main goals of the course are the statistics concepts and calculations.

>Depending on your individual needs, you should supplement the lectures with reading in the assigned and recommended texts.

LEARNING OBJECTIVES

1. Understand the notions of sample and population
2. Know the role that probability and sampling plays in statistical inference.
3. Know the fundamentals of probability and several distributions.
4. Know whether a given statistical method does or does not apply to a situation or data set.
5. Construct confidence intervals and estimate P -values using Normal, Student, F , and other distributions.
6. Interpret confidence and significance levels correctly.
7. Calculate averages, test statistics, and other formulas using Excel.
8. Communicate using histograms, scatterplots, and other data summaries.

GRADE CALCULATION

30% Homework

25% Exam 1

25% Exam 2

20% Exam 3

To keep grading fair, requests for special treatment, including extra credit or rounding exceptions, will be ignored.

A+	$X \geq 97\%$	C+	$77\% \leq X < 80\%$
A	$93\% \leq X < 97\%$	C	$73\% \leq X < 77\%$
A-	$90\% \leq X < 93\%$	C-	$70\% \leq X < 73\%$
B+	$87\% \leq X < 90\%$	D+	$67\% \leq X < 70\%$
B	$83\% \leq X < 87\%$	D	$63\% \leq X < 67\%$
B-	$80\% \leq X < 83\%$	D-	$60\% \leq X < 63\%$
		F	$X < 60\%$

The content of this syllabus may change at the instructor's discretion.

IN-CLASS EXAMS

- >On the two exam dates listed above, bring your own scantron form, pencil, calculator, and CometCard.
- >The scantron form number will be given in class and in an email announcement at least a week prior.
- >Closed notes and closed book.
- >If an emergency (such as an illness) prevents you from taking the exam, notify the instructor immediately.
- >No make-up exams will be offered for your own personal matters (such as family trips or weddings) or other non-emergency reasons.
- >If you miss the exam and do not contact the instructor before the end of the exam day, you will receive a grade of zero for the missed exam.

ONLINE EXAM

- >You will take the last exam at home in elearning on Saturday, December 10 (time frame TBA).
- >Open notes, open book, Excel required.
- >No collaboration, no social media, and no discussing the exam with anyone except the instructor.

ONLINE HOMEWORK

- >Around 7 homework sets will be posted and submitted via elearning.
- >Announcements in class and in email will alert you when a homework is posted and when it is due.
- >Late submissions are not accepted for any reason.

GENERAL ASSIGNMENT POLICIES

- >Check your UTD email regularly for announcements sent via elearning.
- >No extra credit or bonus projects will be given. Complete the given work, plan ahead, and be vigilant!
- >Submit only your own work.
- >Evidence of academic dishonesty (such as copying work, sharing or getting exam material, or communicating about the exam in online platforms) will be referred to the appropriate dean's office. If you are found guilty, as far as this course is concerned, you will receive a score of zero on your submission.
- >Read <https://www.utdallas.edu/conduct/dishonesty>
- >Also see the student code of conduct: <https://policy.utdallas.edu/utdsp5003>

CLASSROOM POLICIES

- >In general, please treat others the way you want them to treat you.
- >Please show courtesy and charity to other students and the instructor. Focus on the lecture and raise your hand to contribute.
- >Avoid leaving early or arriving late (except for emergencies).
- >At the instructor's discretion, you may be asked to leave the classroom and/or receive a grade penalty for behavior that interferes with class.
- >You are expected to attend class and participate regularly.
- >Skipping class and not participating will bring you lots of stress and difficulties. Instead, always come to class, sit as close to the front as possible, and participate regularly (in class, in email, or in office hours).

GENERAL SYLLABUS STUFF

>>University restrictions about class recordings

Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Unless the Office of Student AccessAbility has approved the student to record the instruction, **students are expressly prohibited from recording any part of this course**. The instructor's recordings may not be published, reproduced, or shared with those not in the class, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. If the instructor or a UTD school/department/office plans any other uses for the recordings, consent of the students identifiable in the recordings is required prior to such use unless an exception is allowed by law. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

>>University restrictions about class materials (lecture note files, instructor notes, solutions, etc.)

The materials posted by the instructor may be downloaded during the course; however, **these materials are for registered students' use only**. Classroom materials may not be reproduced or shared with anyone not in the class, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

>>University technical requirements and help

In addition to a confident level of computer and Internet literacy, certain minimum technical requirements must be met to enable a successful learning experience. Please review the important technical requirements on the [Getting Started with eLearning](#) webpage: <https://ets.utdallas.edu/elearning/students/current/getting-started>

This course can be accessed using your UT Dallas NetID account on the [eLearning](#) website. Please see the course access and navigation section of the [Getting Started with eLearning](#) webpage for more information. To become familiar with the eLearning tool, please see the [Student eLearning Tutorials](#) webpage.

UT Dallas provides eLearning technical support 24 hours a day, 7 days a week. The [eLearning Support Center](#) includes a toll-free telephone number for immediate assistance (1-866-588-3192), email request service, and an online chat service.

The University is committed to providing a reliable learning management system to all users. However, in the event of any unexpected server outage or any unusual technical difficulty which prevents students from completing a time sensitive assessment activity, the instructor will provide an appropriate accommodation based on the situation. Students should immediately report any problems to the instructor and contact the online [eLearning Help Desk](#). The instructor and the eLearning Help Desk will work with the student to resolve any issues at the earliest possible time.

>>UT Dallas syllabus policies and procedures:

The information contained in the following link constitutes the university's policies and procedures segment of the course syllabus.

<https://go.utdallas.edu/syllabus-policies>

>>Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

"As a Comet, I pledge honesty, integrity, and service in all that I do."

>>Academic Support Resources

The information contained in the following link lists the University's academic support resources for all students. Please go to [Academic Support Resources](#) webpage for these policies:

<https://provost.utdallas.edu/syllabus-policies/#academic-support-resources>

"That is the one eternal education: to be sure enough that something is true that you dare to tell it to a child."

—G. K. Chesterton (from the book *What's Wrong with the World*)