

SUMMER STATISTICS!

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)

Dr. Tristan Whalen

OPRE 3360.5u1 *Summer* 2023

Managerial Methods in Decision Making Under Uncertainty (a.k.a. *Business Statistics*)

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 **3360.5u1** in every email to me. Office visits by appointment only during the summer: please email to request an appointment.

TA: Trushil Joshi

trushil.joshi@utdallas.edu

CLASSROOM LOCATION & TIMES

JSOM 1.110 Monday 5:15pm – 10:00pm

CALENDAR & HOLIDAYS

Withdrawal dates: June 9 (without a 'W'), June 26 - July 10 (late withdrawal)

Class dates: Mondays June 5 through August 7, except for no class on June 19

HARDWARE & SOFTWARE

>Regular and reliable access to **Elearning**.

>We use **Excel** throughout the course.

>You may want to bring a laptop to class for Excel work, but this is optional.

>A handheld **calculator** with statistics functions (e.g., TI-84plus) for the in-class exams.

TEXTBOOKS

Modern Business Statistics, by Anderson, Sweeney, Williams, Camm, Cochran, Fry, and Ohlmann (ASWCCFO), 7th edition. The official textbook for OPRE 3360. Use it to supplement class lectures and for additional business-related examples. The text is optional.

Statistics, by Freedman, Pisani, and Purves (FPP), 4th edition. My favorite statistics textbook by far and the source of how I teach and understand statistics. Plenty of practice exercises with solutions provided to the student. Especially valuable for solid conceptual understanding and for explaining statistics correctly in an understandable way. Valuable emphasis on sampling methods and models. The text is recommended and optional.

TOPIC LIST

"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*)

Topic	FPP	ASWCCFO
Controlled experiments	Ch.1	1.3 (brief mention)
Observational studies	Ch.2	1.3 (brief mention)
Distributions and Histograms	Ch.3	2.2
Averages and standard deviations	Ch.4	3.1-3.2
Normal approximations of data	Ch.5	6.2
Measurement error	Ch.6	n/a, but used in 14.2
Scatterplots and correlation	Ch.8-9	2.4, 3.5
Simple Linear Regression	Ch.10-12	14.2-14.3
Multiple Regression	sec 12.3	15.1-15.3, 15.7-15.8
Probability, basic calculations, independence	Ch.13	4.1-4.4
Sample spaces, addition rule, mutual exclusiveness	Ch.14	4.1-4.4
Binomial probabilities	Ch.15	5.5
Chance processes and random variables	Ch.16	5.1
Expected value and standard error	Ch.17	5.3
Central Limit Theorem	Ch.18	7.5-7.6
Sampling	Ch.19	7.1-7.2, 7.7
Confidence intervals	Ch.20, 21, 23	
Measurement error as a random variable	Ch.24	n/a, used in 14.2
Hypothesis tests (one-sample z-test, t-test)	Ch.26	9.3-9.4
Two-sample z-test	Ch.27	10.1
Two-sample t-test	n/a	10.2
Chi-square test	Ch.28	12.1-12.2
F-test (ANOVA)	n/a	13.1-13.2
Inference on regression	n/a	14.4-14.6
A closer look at hypothesis tests	Ch.29	n/a

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.

ADVICE FOR SUCCESS

>Attend every class and sit as close to the front as possible.

This is true for any college course, regardless of the presentation skill of the instructor. If you care about your grade and GPA, at a minimum you should never skip class. Attend every session, put away your smartphone, and actively participate (even just listening). These actions train your brain to take the course seriously, and they encourage the presenter, thus improving the quality of the class.

>Build time into your weekly schedule for the course outside of class time.

This is true for any college course. Set aside at least 5 hours per week outside of class session, depending on your skill level. Allow not only for homework, but also for reading the textbook, reviewing class notes, and practicing the software. If study and practice are not planned into your schedule, then they will not happen, and the exams will be very hard.

>Email the instructor early and often.

Do not let your first email to the instructor be about a low grade, and certainly do not let your first contact with the instructor be after the last exam. Instead, email the instructor as soon as you have any question, concern, or confusion. Make your first email about a course topic and not about a grade or what will be on a test.

>Make emails useful and courteous.

Read Dr. Whalen's email guide.

>Expect to make mistakes, get frustrated, and try repeatedly.

We learn as much when things go wrong as when they go right. ("Get messy! Make mistakes!" as Ms. Frizzle says.) All of us (students and instructors) will make mistakes and learn from them.

>This is not only about using formulas.

There are plenty of calculations, but software does all the tedious work in a flash. More importantly, we check whether a calculation is valid and, if it is, decide how to interpret what it does. Many questions on homework and exams address concepts, such as whether the statistical methods apply in the first place, or how to interpret them if they do.

>Take care of yourself.

This is true for any work. Your physical, mental, and emotional health are interrelated. Get plenty of sleep each night on a regular schedule. Maintain a regular diet. Limit time in social media. (I guarantee that, if you go at least 4 weeks without using any social media, you will notice an improvement in your physical and mental wellbeing. How often do you come away from social media sessions feeling refreshed, rejuvenated, and enlightened?) Spend time with friends and/or family in person. Engage in wholesome activities and entertainment. If you feel better in general, you will do better in the class. This sounds obvious but is worth stating.

GRADE CALCULATION

30% Online Homework	A+ $X \geq 97\%$	C+ $77\% \leq X < 80\%$
30% Online Quizzes	A $93\% \leq X < 97\%$	C $73\% \leq X < 77\%$
20% Paper Exam 1	A- $90\% \leq X < 93\%$	C- $70\% \leq X < 73\%$
20% Paper Exam 2	B+ $87\% \leq X < 90\%$	D+ $67\% \leq X < 70\%$
	B $83\% \leq X < 87\%$	D $63\% \leq X < 67\%$
To keep grading fair, requests for special treatment, including extra credit or rounding exceptions, will be ignored.	B- $80\% \leq X < 83\%$	D- $60\% \leq X < 63\%$
		F $X < 60\%$

When I calculate your grade in elearning, I take the average of your homework scores (as percentages) and call that "HW AVG." Then I take the average of your quiz scores (as percentages) and call that "QUIZ AVG." Then your score equals

$$0.3 * (\text{HW AVG}) + 0.3 * (\text{QUIZ AVG}) + 0.2 * (\text{Exam 1}) + 0.2 * (\text{Exam 2})$$

Notice that each homework set is equally weighted. Also note that if hw1 has 8 points and hw2 has 20 points, then an 8/8 on hw1 and a 20/20 on hw2 are each 100%.

Likewise, each quiz is equally weighted. There will be 2 or 3 quizzes, depending on how much material we cover. Each quiz is worth 15% if there are only two. If there are three, then each quiz is worth 10%.

GRADED WORK

Online Quizzes: Take online in elearning. Complete them at home during the assigned time frame. Some problems require stat software. Timed (around 45, 60, or 90 minutes), but open notes and open book.

Tentative online quiz dates: Saturday, June 17; Saturday, July 22; Wednesday, August 9

Paper Exams: Closed notes and closed book. Mix of multiple-choice and short-answer questions. Bring a handheld calculator, pencil, and your Comet Card. Focus more on concepts than calculations. To be taken in the classroom. Part of class time will be lecture like usual, and the other part will be the exam. Not ideal, but pretty much unavoidable on this schedule.

Tentative in-class paper exam dates: July 3, July 31

Homework: Set of problems to be completed and submitted via elearning within about one week from date assigned. How many homework sets depends on how far we get in class. Expect about one set every week or two.

Do not ask for extra credit, bonus projects, second attempts, and the like. These requests will be ignored to ensure fairness to the whole class.

QUIZ POLICIES

- >Come to class regularly for announcements. You are responsible for missing an announcement made in class. Also check UTD email regularly.
- >Dates of quizzes will be announced in class the week prior.
- >Take a quiz during the quiz day from home in elearning.
- >Open notes and open book, but you are expected to prepare in advance.
- >Individual work only. No collaboration with anyone else. No communication about the quiz with anyone before, during, or after, except the instructor or the TA.

EXAM POLICIES

- >Come to class regularly for announcements. You are responsible for missing an announcement made in class. Also check UTD email regularly. (Hmm, that sounds familiar.)
- >Dates of exams will be announced in class the week prior.
- >Take an exam during allotted class time.
- >Bring pencils, a handheld calculator, and your CometCard.
- >Closed notes, closed book, closed everything, except your mind.
- >The exam and scratch paper will be provided.

EXAM & QUIZ MAKE UP POLICIES

- >If an emergency (such as you wake up sick) prevents you from taking a quiz or exam, notify the instructor immediately (usually an email).
- >No make-ups will be offered for your own personal matters (such as family trips or weddings) or other non-emergency reasons.
- >If you miss a quiz or exam and do not contact the instructor before the end of the quiz or exam day, you will receive a grade of zero for the missed quiz or exam.

HOMEWORK POLICIES

- >Come to class regularly for announcements. You are responsible for missing an announcement made in class. Also check UTD email regularly. (This must be rather important.)
- >Homework will be posted and announced at least one week prior to the due date.
- >Many problems will be submitted in elearning.
- >Occasionally, you may hand in a printed page of your work for a written question.
- >No make-ups or extensions of homework for any reason.
- >No extra credit or bonus projects will be given, so do not ask for any. 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. Do not have side conversations.
- >Avoid leaving early and avoid arriving late.
- >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).

Various lawyers have suggested we tell you that the content of this syllabus may change at the instructor's discretion.

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*)