STAT 1000: Applied Statistical Method(Draft) 1100 — 2021 Summer

Class Information

Dates: May 17th – June 26th,2021 *Time:* 4:00 - 5:25 p.m., M-T-W-T *Zoom Link:* https://pitt.zoom.us/j/98821517247 (Passcode: STAT1000) *Instructor:* Rui Kang *Text Book:* Moore, McCabe, and Craig. *Introduction to the Practice of Statistics*

Office Hours

TAs and the instructor will hold office hours as specified below. In order to reduce unnecessary burden, **please send a notification email** to us if you plan to come.

Name	Email	Office Hour	Zoom Link
Zi Wang	ZIW43@pitt.edu	11:00 AM - 1:00 PM Friday	https://pitt.zoom.us/j/95616278404
Giang Vu	GTV4@pitt.edu	10:00 AM - 12:00 PM Thursday	https://pitt.zoom.us/j/8116009352
Rui Kang	ruk18@pitt.edu	2:00 PM - 4:00 PM Wednesday	https://pitt.zoom.us/j/7399080099

Course Description

This course is an intensive introduction to statistical methods. It is designed for students who want to do data analysis and to study further ideas in applied statistics beyond this course. The topics covered include descriptive statistics, elementary probability, random sampling, controlled experiments, hypothesis testing, regression and the analysis of variance. Emphasis will be placed on the statistical reasoning underlying the methods. Students will also become proficient at the use of Minitab to analyze and display data.

Lectures

The lectures are synchronous and recorded. The recorded video will be uploaded to Panopto in case students occasionally miss classes. The lecture slides are posted on Canvas as PDF files. Each set of lecture notes features several examples displaying the day's concepts. All examples are left blank for you to fill in as we progress through the lecture. Feel free to print these out before class, take notes on your laptop, or use whatever method works best for you. I do not post the solutions to the examples on Canvas because that would partially defeat the purpose of coming to class. If you miss a class, you are responsible for finding out what you missed and obtaining the solutions to the lecture slides.

Recitations

There are two recitations each week. Recitations will consist of three parts: a review of the material from the previous lectures, an opportunity to ask questions regarding the weekly homework assignment, and working through additional problems relating to recent material. Recitation problems that you will complete along with the corresponding data will be posted on Canvas each week. Your TA will provide you with more information regarding how they plan to conduct their recitations. Please make every attempt to attend the recitation section for which you are registered. If there

is an occasion when you would like to or need to attend another recitation, please notify your TA ahead of time and make sure this is not a problem. The recitation will NOT be recorded.

Day	Time	Section	TA	Zoom Link
Monday	2:00 - 2:55 PM	1120	Zi Wang	https://pitt.zoom.us/j/91495629679
Monday	3:00 - 3:55 PM	1130	Zi Wang	https://pitt.zoom.us/j/91495629679
Wednesday	2:00 - 2:55 PM	1120	Giang Vu	https://pitt.zoom.us/j/91495629679
Wednesday	3:00 - 3:55 PM	1130	Giang Vu	https://pitt.zoom.us/j/91495629679

Recitations on May 17th are cancelled and will meet for the first time on May 19th.

Software

Throughout the semester we will use the statistical software package MINITAB.

- This package is available for download from my.pitt.edu for free. PC users should search for "Minitab" while Mac users must search for "Minitab Express", which doesn't have the same capability as the full version of MINITAB on a PC.
- MINITAB is also available on the virtual lab provided by our university. A detailed guidance with the virtual lab can be found at https://www.technology.pitt.edu/services/virtual-lab.
- Instructions for MINITAB will be available on Canvas. Since MINITAB has been updated, the instructions will not be entirely the same as what it is like now in MINITAB, but it provides some flavor on how to use MINITAB. TAs will also demonstrate how to use MINITAB in the recitations.

You also need to use Microsoft Word to complete your homework.

Grading

The course grade is determined by the following components:

Homework	25%		
Quiz	9%		
Midterm Exam 1	18%		
Midterm Exam 2	18%		
Final Exam	30%		

Final course grades will be assigned based on the point cutoffs in the table below.

Percentage	Letter Grade	Percentage	Letter Grade	
93% and up	A/A+	73% - 76.9%	С	
90% - 92.9%	A-	70% - 72.9%	C-	
87% - 89.9%	B+	67% - 69.9%	D+	
83% - 86.9%	В	63% - 66.9%	D	
80% - 82.9%	B-	60% - 62.9%	D-	
77% - 79.9%	C+	Under 60%	F	

Do not lobby for your grade at the end of the semester. Grades are not negotiable. Please do not email me if you are unhappy with your final grade after they have been posted unless you suspect a

mistake has been made in the calculation of your grade. You have plenty of opportunities to display your mastery of the topics throughout the semester.

I will occasionally have students come to me towards the end of the semester (and even after the final exam), informing me that they need a certain grade to graduate, continue in their program, maintain a scholarship, etc. I will not consider these requests. If you are seriously concerned about attaining the grade you need, the time to approach me is before June. If you want or need help understanding the material, come talk to me or your TA long before the end of the semester.

Homework

There will be five (5) homework assignments in total. All homework assignments are due on **Saturdays, 3:00 PM, US Eastern Time**. Homework answer sheets and any necessary data will be posted on Canvas with the assignment.

- Submission: All homework assignments must be submitted on Gradescope using the provided answer sheets. Unless otherwise stated, homework must be typed and submitted in .pdf format.
- Late submissions will be accepted up through the **Sunday night** following the due date at **11:59 PM**. No additional assistance will be provided after the due date and time. Assignments turned in on:
 - Saturday after 3:00 PM will receive a 10% point deduction from your earned point total
 - Saturday after 7:00 PM will receive a 25% point deduction from your earned point total
 - Sunday will receive a 50% point deduction from your earned point total.
- Solutions to homework assignments will be available on Canvas at midnight the Monday after the due date.
- Any grade appeals must be made within 5 days of the assignment being graded. It is your responsibility to check Canvas to ensure that your grade has been entered correctly.
- Homework assignments mainly serve for you to practice. You are allowed to discuss with your classmates and TA. However, coping another student's homework is strictly prohibited. After the solutions are posted, make sure you read solutions and understand the questions.

Quizzes

There will be nine (9) quizzes in total.

- All quizzes will be open book and open notes. Each quiz consists of five to eight multiple choice questions. You are allowed to use a calculator to complete the quizzes. You are NOT allowed to search for answers online.
- You should finish the quiz on your own **without any kind of discussion** before, during and after the quiz unless both parties in the discussion have completed the quiz.
- Quizzes are mainly designed for you to review the lecture materials. You should watch the recorded video before starting the quiz if you fail to attend the lecture.
- Quizzes will be available on <u>Gradescope</u> on Tuesday and Thursday after the class and close 23 hours later. This is a timed assignment. Once you start the quiz, you must finish within 30 minutes. You can start the assignment any time until the due date and have at most 30

minutes to finish. You should start 30 minutes before the due date to have the full time available to you. Submissions will not be accepted after the time expires or after the due date.

• Once you have started the assignment, you can submit any number of times until the timer is up. You will be graded based on your final submission.

• No late submission will be allowed.

Here is the quiz calendar.

Week	Quiz	Available	Time Limit	Quiz	Available	Time Limit
May 17 - May 20	#1	May 18th 5 PM -	30 min	#2	May 20th 5 PM -	30 min
May 17 May 20		May 19th 4 PM			May 21th 4 PM	
May 24 - May 27	#3	May 25th 5 PM -	30 min			
1viay 27 - 1viay 27		May 26th 4 PM				
May 21 Juno 2	#4	June 1st 5 PM -	30 min	#5	June 3rd 5 PM -	30 min
May 51 - Julie 5		June 2nd 4 PM			June 4th 4 PM	
June 7 - June 11	#6	June 8th 5 PM -	30 min			
buile / buile 11		June 9th 4 PM				
June 14 - June 18	#7	June 15th 5 PM -	30 min	#8	June 17th 5 PM -	30 min
buile 11 buile 10		June 16th 4 PM			June 18th 4 PM	
June 21 - June 25	#9	June 22nd 5 PM -	30 min			
June 21 - June 25		June 23rd 4 PM	50 11111			

Exams

There will be three (3) exams given on the following dates.

- Exam #1: Friday, May 28th
- Exam #2: Friday, June 11th
- Final Exam: Friday, June 25th

The exams are open book and open notes. No make-up exams will be given.

- The exams will be available on Gradescope from 12 AM to 11:59 PM on the date specified above. Once you start the exams, you must finish and will have 2 hours to finish Exam #1 and #2 and 3 hours to finish the final. The time limit of exams may be adjusted in the future. Further notice will be sent before the exam begins if there is any adjustment.
- You must start 2 hours/3 hours before the due date to have the full time available to you. Submissions will not be accepted after the time expires or after the due date.
- You should finish the exam on your own without any kind discussion before, during and after the exam. You are NOT allowed to search for answers or help online.
- If you'll miss an exam (an extremely rare event for an unavoidable emergency with appropriate documentations), please let me know as soon as possible.

Academic Integrity

Students in this course are expected to comply with the University of Pittsburgh's Academic Integrity policy, which can be found at http://www.as.pitt.edu//fac/policies/academic-integrity. Any student found deliberately copying another student's homework assignment will receive a zero for that assignment. Any student allowing another student to copy his/her homework will also receive a zero for the assignment. Any student found cheating on an exam or assisting others in cheating on an exam will receive an F for the course. All cases of academic dishonesty may be subject to further disciplinary action. Generally speaking, it is expected that you do not lie, cheat, or steal in your academic endeavors.

Although this syllabus deals with the most common situations that arise, we live in an imperfect world where we must deal with unexpected circumstances. Rules do not exist for every situation. Those that do not fall under the context of the syllabus will be evaluated on a case by case basis. Any attempt to exploit loopholes or borderline cases not explicitly covered in the syllabus will be considered a case of academic dishonesty.

Disability Statement

Students with documented disabilities are entitled to reasonable accommodations if necessary. If you have a disability that requires special accommodations, please contact Disability Resources and Services in 140 William Pitt Union no later than the beginning of the second week of the semester. Their website is http://www.studentaffairs.pitt.edu/drs/ and their phone number is 412-648-7890. Accommodations will not be granted retrospectively. They will verify your disability and determine reasonable accommodations for this course.

Tentative Schedule

The following is a *tentative* schedule for the course.

Date	Topics	Sections
	Data and Variable Types	1.1, 3.1,3.3
	Sampling Methods	3.3
May 17 - May 20	Experimental Design	3.2,3.4
	Summarizing a Single Categorical Variable	1.2
	Relationship Between Categorical Variables	2.6
	Summarizing Quantitative Data: Part 1	1.2,1.3
	Summarizing Quantitative Data: Part 2	1.2,1.3
Mars 0.4 Mars 0.7	Scatterplots and Correlation	2.2,2.3
May 24 - May 27	Linear Regression	2.4,2.5
	Basics of Probability	4.1,4.2
	Advanced Probability Rules	4.5
	Random Variables	4.3,4.4
	Binomial Distribution	5.3
Mars 01 June 0	Normal Distribution: Part 1	1.4
May 31 - June 3	Normal Distribution: Part 2	1.4
	Sampling Distribution of the Sample Mean	5.1,5.2
	Sampling Distribution of the Sample Proportion	5.3
	Confidence Intervals for a Population Mean	6.1
	Hypothesis Testing for a Population Mean	6.2
June 7 June 11	Effect Size	
June / - June 11	Critical Values and Error Types	6.2,6.4
	Statistical Power	6.4
	Inference for a Population Mean	7.1
	Inference for a Population Proportion	8.1
	Inference for Paired Data	7.1
June 14 - June 18	Inference for the Difference of Two Means	7.2
	Test for Independence	9.1
	One-Factor Analysis of Variance (ANOVA)	12.1
	Multiple Comparisons	12.2
June 01 June 05	Assessing the Simple Linear Regression Model	10.1,10.2
Julie 21 - Julie 25	Prediction Intervals and Confidence Intervals	2.4,10.1,10.2
	Multiple Regression	11.1

While the schedules listed in the syllabus are very unlikely to change, I reserve the right to change the due dates and lectures covered on homework assignments, dates of the midterm exams, remove or add material not otherwise specified, and/or remove lectures so as to make this course as successful and as smooth as possible.