INQ 240 Statistics & Sports Industry
Fall 2020

Instructor: Roger Reakes **Office:** My Home
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Office Hours: Flexible office hours will be available for Zoom meeting office appointments. I will do my very best to accommodate your schedule. To set up an appointment send me an email to request an appointment which includes times you are available. I will send a Zoom meeting invitation based on your availability.

Text: *Elementary Statistics: Picturing the World, (6th edition),*
by Ron Larson and Betsy Farber

Required Materials:
1. All students will need a TI-84 graphing calculator.
2. All students need access to a computer and WiFi for as as many hours as necessary to complete course requirements. The lack of an internet connection due to vacations, jobs and activities are not an excuse for work not being completed.

Note: Students who have completed Stat 202 may not take this course for credit. Students must receive a C or better in this course or Math 111 to declare a major in Business Administration. You may wish to discuss grade requirements with your advisor with regards to your major.

Academic Integrity: You are expected to be familiar with the Academic Integrity Code outlined in the booklet, *Academic Integrity at Roanoke College*.
https://www.roanoke.edu/inside/a-z_index/academic_affairs/academic_integrity

1) The use of any electronic device other than a calculator during a quiz or exam is strictly prohibited. Any use of such devices during a quiz or exam will be considered a breach of academic integrity. You will not be allowed to share a calculator.
2) Cell phones must be turned off prior to entering the classroom. You are not to either send or receive text messages during class!
3) You are expected to do all work graded for accuracy independently. This includes tests, quizzes, and graded practice problems. You are allowed to work alone, with a partner or a group on the daily independent practice problems which will only be checked for completion.

Course Objective: Students will gain an understanding of how decision making is accomplished using modern statistical techniques. Topics include descriptive statistics, graphical techniques, elementary probability, estimation, inferential statistics, linear correlation, and regression. Quantitative reasoning will also be emphasized.

Course Outcomes: By the end of this course, successful students will be able to:
1) use the methodologies of statistics to investigate a topic of interest and make decisions based on the results,
2) use the methodologies of statistics to design and carry out a simple statistical experiment,
3) use the methodologies of statistics to critique news stories and journal articles that include statistical information. In the critique students will recognize variability and its consequences, identify potential sources of bias and both proper and improper cause and effect inference,
4) articulate the importance and limitations of using data and statistical methods in decision making,
5) write about course topics clearly and effectively, and
6) interpret quantitative information related to the course topic.

Policy on expected number of hours of work per week: Per the Academic Catalog, "For each one-unit course, students are expected to complete 12 hours of work inside and outside of class each week." Realistically, this may vary due to the strength of the background of each individual student with respect to course content.

Grading:

Video Completion:	5%
Independent Practice Completion:	10%
Graded Practice Accuracy Problems	15%
Written Work:	10%
Topics Mastered (Tests):	60%

Grades will be assigned using the scale below:

A	93-100	C	73-76
A-	90-92	C-	70-72
B+	87-89	D+	67-69
B	83-86	D	63-66
B-	80-82	D-	60-62
C+	77-79	F	Below 60

Testing Policy: We will use Mastery-Based Testing rather than Points-Based Testing. Mastery-based testing is very different from what you are used to - do not hesitate to ask me questions!
You will only receive credit for answers that demonstrate you completely understand (have mastered) a topic. But you will get MANY chances to display mastery throughout the semester with NO PENALTY for earlier attempts.

- The course has been summarized by 16 topics.
- Your mastery of questions on these topics is assessed through the working of problems in mastery opportunity classes and during the final exam period.
- Each problem submitted is graded as either “Mastered” or “Not Mastered”. A grade of Mastery indicates that you have demonstrated a full understanding of the concept being tested and further work on the topic is unnecessary.
- Once you have mastered a topic, you need not attempt it again.
- There is no penalty for multiple attempts taken to achieve mastery.
- Mastery does not mean perfect! It means you understand and can demonstrate all fundamentals of the topic and are proficient at the level desired for the course.
- Your overall test grade is determined by the number of topics you have mastered illustrated in the table below:

# Mastered	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Mastery Grade	100	95	90	85	80	75	70	65	60	55	50	45	40	35	30	25

- All students are required to attempt to master topics the first time in class on the date listed in the course schedule.
- Retrying to master the topics after the first attempt may be done any time after the first attempt either in class on mastery opportunity days or during office hours.
    - To retry a topic in class you will request which topics you want to attempt to master using a Google Form link sent to you via email or use the link in Inquire. This request must be submitted by NOON the day prior to the mastery opportunity class.
    - To retry a topic during office hours, you must book an appointment during office hours. If my posted office hours do not work with your schedule, you may email me to set up a time that works for both of us.

Attendance: Class attendance is a very important aspect of a student's success in this course. The student is expected to attend every class and is accountable for any missed classes..

Written Work:

"Where's the Data" Assignment:

You must find an article about sports you are interested in that uses data analysis to make or prove a point. In the article you must find the data set or a description of the data set used to support the authors claim and what sampling technique was used to collect the data. You must complete and submit an assignment sheet which is posted on Inquire using full sentences, correct grammar and spelling. The assignment is 10% of your written work grade.

Linear Regression Assignment:

You will find two sets of quantitative data to perform a linear regression test to determine a relationship exists using an error of your choice. The results will be used to write a conclusion discussing your results and interpret what they mean in regards to your population. Include a discussion of what this means for you and the reader in terms of the conclusion. The assignment is 10% of your written work grade.

Article Proposal Assignment:

In full sentences answer questions about your idea for your written article. The purpose of this proposal is to lead you in the right direction and minimize wasted time. The assignment is 10% of your written work grade.

Sports Article using Data Analysis Assignment:

After reading articles using data analysis to support an author's claim, you will become the author. Your task will be to use proper techniques to collect, organize, visualize, analyse and interpret data. You will use these results to write an interesting sports article which uses your results of your statistical study to prove or disprove a claim. The assignment will represent 70% of your written work grade.

Writing Center: Is located on the Lower Level of Fintel Library, offers tutorials focused on writing projects and oral presentations for students working in any field. Writers and presenters at all levels of competence may visit the Writing Center at any point in their process—including brainstorming, drafting, organizing, editing, or polishing presentation skills—to talk with trained peer tutors in informal, one-on-one sessions. The Writing Center is open Sunday through Thursday from 4 to 9 pm. Simply stop in, or schedule an appointment by going to www.roanoke.edu/writingcenter, where our staff members and workshops are also posted. Questions? Email writingcenter@roanoke.edu or call 375-4949. Like our Facebook page for hours and event updates!

Late Work Policy: Independent practice problems must be submitted electronically using email (reakes@roanoke.edu) the day they are due and checked for completion.
This work will only be accepted on the day it is due. No late papers will be accepted without arrangements approved prior to absence OR without written documentation from a college official. If you miss class for any reason you should email the assignment to me the day it is due!
Graded practice problems selected (usually 1 or 2) from the independent practice problems each class and checked for accuracy and may be submitted until solved correctly.
They will be accepted up to midnight the day before the final exam.
Written work needs to be submitted on the due date by 11:59 pm the day its due!
No late papers will be accepted without arrangements approved prior to absence OR without written documentation from a college official.

Subject Tutoring: Subject Tutoring is a CRLA Nationally Certified Program located on the lower level of Fintel Library in room 005. Subject Tutoring offers individual appointments in 30-minute intervals for Lab Sciences, Modern Languages, Math and CPSC, Social Sciences, Business and Economics. Hours are Sunday - Thursday 4 p.m. - 9 p.m. For a list of tutorials or to make an appointment, go to www.roanoke.edu/tutoring.

Tentative Schedule and Assignments:

Use the following link:

Course Schedule

Course Topics List:

Use the following link:

Course Topics

Day	Date	Topic/ Video	Quiz	Textbook Sections	Topic(s)	Assignment
Thur	8/20		None		Introduction to Course	Personal Introduction Email
					Discuss Articles ?	
Tues	8/25	1.1	None	1.1	Statistical Study Vocabulary	pgs 6-7 11-19 odd, 25-33 odd
				1.2		pgs 13-14 7-19 odd
		1.2		1.3	Data Collection, Statistical Study	pgs 25-26 19-29 odd
					Intro to "Where's the Data Assignment"	
Thur	8/27	2.1	GP1.1&1.2	2.1	Frequency Distributions, Histograms	pgs 49-51 11,13,15,19,25, View 29 & 31 on TI84
		2.2		2.2	Bar Graphs, Line Graphs, Circle Graphs, Stem & Leaf Plots	pgs 62-65 5-9 all, 9,11,13-16 17,19 & View 31 on TI84
Tues	9/1	3.1	GP2.1&2.1	2.3	Measures of Central Tendancy	pgs 75-77 17-21 odd, 31,33
		3.2		2.5	Measures of Position	pgs 109-110 11a, 13a,15,25,27
					Where's The Data Written Assignment Due	Due by 11:59 pm
Thur	9/3	3.3	GP3.1&3.2	2.4	Measures of Variation	Pgs 93-95 13-23 odd
Tues	9/8	4	GP3.3	9.1	Scatter Plots & Correlation Coefficient	Pgs 482-483 9-18 all 21-25 odd
				9.2	Linear Regression and Predictions	Pgs 491 17-21 odd
Thur	9/10		GP4		Required Mastery Opportunity for Topics 1-4	
Tues	9/15	5.1	None	3.1	Intro to Probability	Pgs 140-145 15,17,29,31,33, 37-49 odd, 61-67 odd,71,73,76
		5.2		3.3	The Addition Rule for Probability	Pgs 162-165 9-12 all, 13-17 odd, 23,25
Thur	9/17	5.3	GP5.1&5.2	3.4	Finding the Number of Outcomes	Pg 141 25-28 all Pgs 174-175 19-25 odd; 31-35 all
		5.4		3.2	The Multiplication Rule for Probability	Pgs 152-155 7,8,23,25,27,29
Tues	9/22	6.1	GP5.3&5.4	4.1	Probability Distributions	Pgs 197-198 9-18 all,19-23 odd, 29,31
		6.2		4.2	Binomial Probability Distributions	Page 210-212 11-17, 23-29 odd
Thur	9/24	7.1	GP6	5.1	Introduction to the Normal Distribution	Pg 242 10-16 all, 17-23 odd, 27,33,37,39
					Binomial Distributions Activity/Quiz	Assignment Link
Tues	9/29				Required Mastery Opportunity for Topics 5 & 6	
					Mastery Redo Opportunity for Topics 1-4	
Thur	10/1	7.2	GP7.1	5.2	Normal Distributions: Finding Probabilities	Pgs 249-250 7-15 odd
		7.3		5.3	Normal Distributions: Finding Values	Pgs 257-259 17-21 odd,31,33,37
Tues	10/6	8.1	GP7.2&7.3	5.4	Normal Distribution and the Central Limit Theorem	Pgs 269-270 9,27,29,31,35
		8.2		5.5	Normal Binomial Distributions	Pgs 281-282 17-27 odd
Thur	10/8				Spring Break	
Tues	10/13				Spring Break	
Thur	10/15	9.1	GP8.1&8.2	6.1	Confidence Interval for a Mean (Sigma Known)	Pg 306 35 & 37
				6.2	Confidence Interval for a Mean (Sigma Unknown)	Pg 317 31 & 33
		9.2		6.3	Confidence Interval for a Proportion	Pgs 325-326 11-15 odd
Tues	10/20		None		Required Mastery Opportunity for Topic 7 & 8	
					Mastery Redo Opportunity for Topics 1-6	
Thur	10/22	10	GP9.1&9.2	7.2	Hypothesis Test for One Mean (Population Deviation Known)	Pgs 375-376 31-35 odd
				7.3	Hypothesis Test for One Mean (Population Deviation Unknown)	Pg 384-385 17 & 30
Tues	10/27	11	GP10	7.4	Hypothesis Test for One Proportion	Pgs 391-392 9-15 odd

Thur	10/29	12.1	GP11	8.1	Hypothesis Test for Mean of 2 Independent Samples (w/ Sigma)	Pgs 425 15 & 17
				8.2	Hypothesis Test for Mean of 2 Independent Samples (w/o Sigma)	Pg 433 15 & 17
Tues	11/3		None		Project Introduction	
					Required Mastery Opportunity for Topics 9 to 11	
					Mastery Redo Opportunity for Topics 1-8	
Thur	11/5	12.2	GP12.1	8.4	Hypothesis Test for Mean of 2 Dependent Samples (w/o Sigma)	Pgs 442-443 9-13 odd
		13		8.4	Hypothesis Test for Two Proportions	Pgs 451-452 7-11 odd
Tues	11/10	14	GP12.2&Q13	9.3	Hypothesis Test and Confidence Interval for Linear Regression	Pgs 504-507 23,25 (Hypothesis Test & Confidence Interval for Both)
Thur	11/12	15.1	GP14	10.1	Chi Square Test for Good Fit	Pgs 532-533 7,9,11
		15.2		10.2	Chi Square Test of Independence	Pgs 544-545 13,15,17
					Linear Regression Written Assignment	Assignment Link
Tues	11/17		None		Required Mastery Opportunity for Topics 12 to 14	
					Mastery Redo Opportunity for Topics 1-11	
					Article Proposal Due	**Due by 11:59 pm**
Thur	11/19	16	GP15.1&15.2		ANOVA Test for Multiple Means	Pgs 565-566 5,7,9
					Hypothesis Test Selection Partner Activity	Assignment Link
Tues	11/24		GP16		Required Mastery Opportunity for Topics 15 & 16	
					Mastery Redo Opportunity for Topics 1-14	
Mon	**4/19**				**Article Project Due**	**Due by 11:59 pm**
Tues	**4/23**			**Block 10**	**Final Exam: Mastery Redo Opportunity for Topics 1 - 16**	**8:30 am to 11:30 am**
Fri	**4/24**			**Block 11**	**Final Exam: Mastery Redo Opportunity for Topics 1 - 16**	**2:00 pm to 5:00pm**