

INQ 240 Statistics & Sports Industry

Spring 2024

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Office Hours: TBD

All office hours are by appointment. To make an appointment, please use the link:
<https://rreakes24.voucanbook.me>

If these hours do not work with your schedule, please call or email me to set up a Zoom Meeting appointment. I will do my very best to accommodate both of our schedules.

Text Elementary Statistics: Picturing the World. (7th edition). by Ron Larson and Betsy Farber <https://www.pearson.com/us/higher-education/subject/elementary-statistics>
Online Bookstore Link

Required Materials: All students will need either a hand held TI-84 graphing calculator OR a laptop which will allow you to access an online TI-84 emulator. We will discuss this option in class.

Recommended Technology: A laptop for class is not required, but very helpful!

Note: Students who have completed Stat 210 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.

Mask Policy: The college is starting the term without a specific mask mandate. Some offices on campus may require that masks be worn (such as Health Services). I will NOT be requiring masks in my classes at this time.

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/insicle/a-z/index/academic-integrity)
[https://www.roanoke.edu/insicle/a-z/index/academic-integrity.](https://www.roanoke.edu/insicle/a-z/index/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 computer or calculator.
- 3) You are expected to do all work graded for accuracy independently. This includes tests, quizzes and written work. You are allowed to work alone, with a partner or a group on the daily independent practice problems which will only be graded 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.

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.

Grading:

Video Completion: 5%
 Open Notes Quizzes 50/0
 Independent Practice Completion: 100/0
 Graded Practice Accuracy

Written Work:

Topics Mastered (Tests):

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 "Redo". 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

- 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 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.

Late Work Policies:

Video completion will be checked prior to class to ensure you have watched the video at least once! You may not get credit for watching the video after class has begun without written documentation from a college official.

Independent practice problems are uploaded to the Inquire Assignment link. This work will only be accepted by the end of class the day it is due. No late submissions 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 submit the assignment to me the day it is due!

Accuracy Quizzes will be administered every day that graded practice is due. A student can make up the quiz if it was missed due to an excused absence. An absence is excused by notifying prior to class that you will be absent.

Written work needs to be submitted on the due date by 11:59 pm the day it's due! No late papers will be accepted without arrangements approved prior to absence OR without written documentation from a college official.

Written Work Preview:

"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 author's 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, analyze 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.

Co-Curricular Engagement: The MCSP Department offers a series of talks (MCSP Conversation Series) that appeal to a broad range of interests related to your fields of study. You are invited to be involved with all these meetings. After attending, submit a one-page paper reflecting on the discussion through Inquire. These reflection papers earn extra credit, with .5% added to your course average for each attended, up to 1% total. In addition, individually you may request that other appropriate events can count. [Link to schedule.](#)

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 for: [Course Schedule](#)

Course Topics List:

Use the following link: [Course Topics](#)

Day	Date	Video Due	IP Due	Topic Description	Independent Practice Assigned
Wed		None	None	Introduction to Course	Personal Introduction (IPO)
		1 1	IPO	Statistical Study Vocabulary Types and Levels of Data	pgs 6-7 11-19 odd. 25-33 odd pgs 13-14 7-19 odd
Mon	1122	1 2		Data Collection, Statistical Study IA/hr;r-e's the Data	pgs 25-26 21-33 odd
Wed		1 124		Frequency Distributions, Histograms	pgs 11 31 & 33 using Pics T184
Fri	1/26	22	IP2.1	Bar Graphs, Line Graphs, Circle Graphs, Stem & Leaf Plots Where's The Data Written Assignment Due	pgs 62-65 5-8 13-16, 31 using T184 Pics Due by 11:59 pm
Mon	1129	3.1	IP2.2	Measures of Central Tendency	pgs 74-76 17-21 odd, 31,33
Wed	1/31		IP3.1	Measures of Position	pgs 109-110 11a,13. 23,27 using T184 Pics
Fri	2/2	None	None	Mastery Opportunity for Topics 1 to 2	None
Mon		3.3	IP3.2	Measures of Variation	Pgs 93-95 13-23 odd
Wed	2/7	4	IP3.3	Scatter Plots & Correlation Coefficient	Pgs 481-482 9-12 all, 15-18 all, 23 & 25 using Pics T184
Fri				Linear Regression and Predictions	Pgs 491 17 & 19 No Scatter Plot Required
Mon	2/9	5.1	IP5.1	Intro to Probability	Pgs 140-141 odd
Mon	2/12	5.2		The Addition Rule for Probability	Pgs 162-164 9-12 all, 13-17 odd,25
Wed	2/14	5.3	IP5.2	Finding the Number of Outcomes	pg 141 37-40 all Pgs 174-175 15-18 all, 19-25 odd; 31-34 all
Fri	2/16	None	None	Mastery Opportunity for Topics 1 to 4	None
Mon	2/19	5.4	IP5.3	The Multiplication Rule for Probability	Pgs 152-153 723,27
Wed	2/21	6.1		Probability Distributions	Pgs 197-198 9-17 odd.19-23 odd
Fri	2/23	6.2	IP6.1	Binomial Probability Distributions	Page 210-212 15.1921 27.31
Mon	2/26	7.1	IP6.2	Introduction to the Normal Distribution	Pg 242 11-16 all, 17-23 odd,
Wed	2/28	7.2	IF) 7.1	Normal Distributions: Finding Probabilities	Pgs 249-250 13-1 7 odd
Fri	3/1	None	None	Mastery Opportunity for Topics 1 to 6	None
Mon	3/4			Spring Break! No Class!	
Wed	3/6			Spring Break! No Class!	
Fri	3/8			Spring Break! No Class!	
Mon		7.3	IF' 7.2	Normal Distributions: Finding Values	Pgs 257-259 17-21 odd, 35-39 odd
Wed	3/13	8.1	IP7,3	Normal Distribution and the Central Limit Theorem	Pgs 270-211 9.29131 .35
Fri		8.2	IP8.1	Normal Binomial	
				Distributions	Pg 281
Mon	3/18	9.1		Confidence Interval for a Mean (Sigma Known)	Pg 306 35 & 37 (95% Confidence Interval only!)
			1138.2	Confidence Interval for a Mean (Sigma Unknown)	Pg 317 31 & 35
Wed	3120	Q 2		Confidence Interval for a Proportion	Pgs 325-326 13, 15,25
Fri	3/22			Mastery Opportunity for Topics 1 to 8	None
Mon	3/25	10	1139.2	Hypothesis Test for One Mean (Population Deviation Known)	Pgs 375-376 31
Wed	3/27	11		Hypothesis Test for One Mean (Population Deviation Unknown)	Pg 384-385 20121 928 391-392

Test						
Fri	3/29		IPIO		Hypothesis for One Proportion Good Friday! No Class!	Pgs
Mon	4/1	12.1		I P I I	Hypothesis Test for Mean of 2 Independent Samples (w/ Sigma) Hypothesis Test for Mean of 2 Independent Samples (w/o Sigma)	Pgs 425 17.19 Pg 434 15 & 17 (Make ni and n2 = 30 in all cases!)
Wed	4/3	12.2		2.1	Hypothesis Test for Mean of 2 Dependent Samples (w/o Sigma)	Pg 442 12,13
Fri	4/5	None		None	Mastery Opportunity for Topics 1 to 12	None
Mon	4/8	1 3		PI 2.2	Hypothesis Test for Two Proportions	Pgs 451-452 9, 11 Due: ASAP before Writing Article Assimnenl
Wed	4/10				Hypothesis Test and Confidence Interval for Linear Regression	Pgs 504-507 2325 (Hypothesis Test & Confidence Interval for Both)
Fri		15.1			Chi Square Test for Good Fit	Pg 533 9.11
Mon		152			Chi Square Test of Independence	Pgs 543-544 15,19 Linear Regression Written Assignment Due Due by 11:59 pm
Wed		16.1			ANOVA test for Multiple Means	Pg 566 9111
Fri		16 2			F-Test for Variances	Pg 555 23125
Mon	4/22	None			Mastery Opportunity for Topics 1 to 16 Written Article Proposal Due	None Due by 11:59 pm
Tue	4/23	None			Mastery Redo Opportunity for Topics 1 to 16	
Thu	4125	Session 1	Lucas 228		Mastery Redo Opportunity	2:00pm to 5:00pm
Sat	4127	Session 2	Lucas 228		Mastery Redo Opportunity	8:30am to 11:30am
Wed					Written Article Assignment Due	Due by 11 :59 pm