

Statistics and the Sports Industry

INQ 240-D/ Spring 2018

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Office Hours: 1:10-2:10 PM, Monday, Wednesday Friday,
10:00-11:00 AM, Thursday,
and by appointment.

Meeting Time: 2:20-3:20 PM, Monday, Wednesday, Friday

Meeting Place: Trexler 372

Required Texts: *Essential Statistics* (First Edition) by David S. Moore

Required Technology: Minitab Express – You will be required to purchase a 6 – month rental of the software as we will be using it in class and on many homework assignments. The cost is \$29.99 and it can be found at www.minitab.com/express (be careful to select the PC version or mac version; there are no refunds!).

Course Objective: The objective of this course is to explore probability and statistics through the sports industry. The focus of this course will be asking questions and then developing the statistical techniques necessary to answer those questions. Armed with probability theory and statistical techniques we will determine how to summarize, analyze, and communicate key features of a data set. We will understand the leading role that statistical analysis plays in the sports industry through quality assessment, team management, and safety issues.

Learning Outcomes:

1. Students will be able to use the methodologies of statistics to
 - a. Investigate a topic of interest and make decisions based on the results.
 - b. Design and carry out a simple statistical experiment.
 - c. 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.
2. Students will be able to articulate the importance and limitations of using data and statistical methods in decision making.
3. Students will be able to write about course topics clearly and effectively.
4. Students will be able to interpret quantitative information related to the course topic.
5. Students will be able to connect course content to communities beyond the classroom.

Course Topics:

- Descriptive Statistics
- Graphical Methods
- Correlation and Regression
- Estimation
- Elementary Probability
- Test of Hypothesis (z-tests, t-tests and Chi-square test)
- Confidence Intervals
- Analysis of Variance

Homework: Homework will be assigned daily and graded for completeness and correctness.

Quizzes and Tests: There will be a quiz or test most weeks during the semester. Both will assess students understanding of material covered in class, take home readings, and homework assignments.

The four tests will be on:

Friday, February 2nd
Friday, February 23rd
Friday, March 23rd
Friday, April 20st

Assignments and Projects:

Project: Due Wednesday, April 18th. The final portion of the course will be an investigation into issues involving health and ethics in full contact sports. Brain injuries and the long term side effects that accompany them have always been a part of full contact sports, but are just now coming to the public's attention. The final project will consist of a written report and will use the techniques we have learned about statistical analysis to determine how to accurately express the risk of playing full contact sports. Using current articles and data sets we will use statistical methods to determine the safety risks associated with full contact sports.

Final Exam: The final exam will be cumulative and will be Tuesday, May 1st from 2-5PM.

Grading: Grades will be assigned based on written assignments, quizzes, tests, and a final exam as follows,

Tests	50%
Homework/Quizzes/Labs	20%
Project	10%
Final Exam	20%

Grades will be determined based on the following:

A	> 93	B	83 – 86.9	C	73 – 76.9	D	63 – 66.9
A-	90 – 93	B-	80 – 82.9	C-	70 – 72.9	D-	60 – 62.9
B+	87 – 89.9	C+	77 – 79.9	D+	67 – 69.9	F	< 60

MCSP Conversation Series: Attending at least one MCSP conversation series event is required. Within one week of the lecture, a one page reflection paper will be due and will count as a quiz grade.

Missed Test: I will not give make-up tests. If you miss a test and have discussed it with me before the class takes the test, I will use your final exam grade for replacement.

Make-up Work: No make-up work will be accepted. Any excused work will be replaced by the final exam.

Expected Hours of Work: This course expects you to spend at least 12 hours of work each week inside and outside of class.

Attendance: Attendance is required and expected and is crucial to be successful in this course. An absence that is not discussed with the instructor prior to class is considered unexcused. Regardless of whether the absence is excused or not, you are responsible for all the material covered in class.

Technology: Scientific calculators and Minitab Express will be used throughout the semester in the classroom and on assignments. We will also be using Classroom Stats, a data collection and analysis application, throughout the semester. Please install the app on your smartphone. A link can be found on the front page of www.classroomstats.com.

Academic Integrity System: The Roanoke College Academic Integrity System applies to all graded work in this course. Students are responsible for understanding and adhering to the Academic Integrity System. Among other things the Academic Integrity System prohibits giving or receiving unauthorized aid, assistance, or unfair advantage on academic work. Please note that having a phone or unauthorized electronic device out during a test is an academic integrity violation.

The Writing Center @ Roanoke College, located on the Lower Level of Fintel Library, offers writing tutorials focused on written and oral communication for students working on writing assignments/projects in any field. Writers at all levels of competence may visit the Writing Center at any point in their process, from brainstorming to drafting to editing, 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 schedule of writing workshops and creative writing playshops is also posted. Questions? Email writingcenter@roanoke.edu or call 375-4949. Like our Facebook page for updates!

Subject Tutoring is an Internationally Certified Tutoring Center through the College Reading and Learning Association (CRLA). Our highly trained staff offers individual tutoring appointments for the

following subjects: Business, Economics, Mathematics, Modern Languages, Lab Sciences & Social Sciences. Subject Tutoring is located on the lower level of Fintel Library in room 05 from 4-9 p.m. Sunday – Thursday. Students can logon to make an appointment at www.roanoke.edu/tutoring in 15, 30 or 45 minute intervals. For questions or concerns, please contact Shannon McNeal at 540-375-2247 or mcneal@roanoke.edu.

Accessible Education Services (AES) is located in the Goode-Pasfield Center for Learning and Teaching in **Fintel Library**. AES provides reasonable accommodations to students with documented disabilities. To register for services, students must self-identify to AES, complete the registration process, and provide current documentation of a disability along with recommendations from the qualified specialist. Please contact Dr. Sue Brown, Director of Academic Services and Acting Coordinator of Accessible Education Services, at 540-375-2247 or by e-mail at sbrown@roanoke.edu to schedule an appointment. If you have registered with AES in the past and would like to receive academic accommodations for this semester, please contact Dr. Brown at your earliest convenience to schedule an appointment.