

# Statistics and the Sports Industry

INQ 240E/ Spring 2017

**Instructor:** Matthew R. Browning / [browning@roanoke.edu](mailto:browning@roanoke.edu)

**Office:** Trexler 161-C

**Office Hours:** I will be available before (around 5:30 pm) and after class (until 8 pm or whenever the last student leaves, whichever comes first) for questions or by appointment.

**Meeting Time:** 5:45 – 7:15 PM, Monday & Wednesday

**Meeting Place:** 374 Trexler Hall

## Required Materials and Texts:

Ti-83 or Ti-84 Graphing Calculator

*Essential Statistics 2<sup>nd</sup> Edition* by David Moore, William Notz, and Michael Fligner

*A Writer's Reference*, RC custom edition by Diana Hacker

**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 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.

**Course Topics:**

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

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

**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:

Wednesday, February 1<sup>st</sup>  
Wednesday, March 1<sup>st</sup>  
Wednesday, March 29<sup>th</sup>  
Monday, April 17<sup>th</sup>

**Writing Assignments:** You will be asked to read, reflect on, and critique the use of statistics in articles or newspaper reports related to the sports industry. Writing assignments will count toward your homework grade.

**Project: Due Wednesday, April 19<sup>th</sup>.** 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 Monday, May 1<sup>st</sup> from 6 to 9 PM.

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

|                                  |     |
|----------------------------------|-----|
| Tests                            | 40% |
| Homework                         | 10% |
| Quizzes                          | 15% |
| Writing Assignments and Projects | 15% |
| 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. While attending only one event is required, students are encouraged to attend additional lectures.

**Attendance:** Attendance is required and expected and is crucial to be successful in this course. Attendance will be taken often through collecting assignments, quizzes, or tests. 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.

**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.

**Technology:** Scientific calculators and the statistical program Minitab will be used throughout the semester in the classroom and on assignments. Cell phones are expected to be turned off before entering the class. There is no appropriate reason for having a cell phone out in class. Computers will be used in the classroom exclusively for academic purposes.

**Academic Integrity System:** Your work is your own. 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.

**The Office of Special Services:** The Office of Special Services provides reasonable accommodations to students with identified disabilities. Although Roanoke College does not have special programs for students with disabilities; reasonable accommodations are provided based on the diagnosed disability and the recommendations of the professional evaluator. In order to be considered for special services, students must identify themselves to the Office of Special Services. Students are required to provide specific current documentation of their disability. Reasonable accommodations may include but are not limited to the following: extended time for test and examinations, testing in a semi-private testing area, proctoring of examinations, use of interpreters, assistive technology, audio recording of lectures, and/or student note-takers. For additional information please contact Pam Vickers, Special Services Coordinator, at 540-375-2247 or email [vickers@roanoke.edu](mailto:vickers@roanoke.edu).

**The Writing Center:** The Writing Center at Roanoke College is a place where writers working in any academic discipline, at any level of competence, at any stage of the writing process meet with trained peer writing tutors in informal, one-on-one tutoring sessions focused on writing. Contact the writing center to schedule an appointment. Drop-ins are welcome, if a tutor is available. Tutoring is FREE to all Roanoke students. Contact the writing center at 540-375-2580 or email [writingcenter@roanoke.edu](mailto:writingcenter@roanoke.edu).

**Subject Tutoring:** Tutoring is available for INQ 240 at the Center for Learning and Teaching. You can meet with a tutor individually or in groups. You can schedule an appointment or you can chat with a tutor online (this feature is available during regular hours: Sunday - Thursday 4-9 p.m.). In order to get the most out of your tutoring experience, please do the following before your session: attempt homework or assignments, come prepared with at least 1-3 questions, and bring all relevant materials.