

Statistical Reasoning: Here's to Your Health!

Prof. Jan Minton
Office: 461 Trexler Hall
Phone: 2488
email: jminton@roanoke.edu

Office Hours: By appointment: Monday – Thursday 2:45 – 4:00pm
Make appointments online at jminton.youcanbook.me
If necessary, other times arranged on case by case basis.

Course Description:

Statistical Reasoning: Students will gain an understanding of how decision making is accomplished using modern statistical techniques. Topics include descriptive statistics, graphical methods, elementary probability, estimation, and statistical inferences

Specific Area of Inquiry: Students will apply the techniques of data analysis to data sets and statistical studies that deal with health related issues.

Course Objectives:

Students will become savvy consumers of statistical information presented in the media with a particular emphasis on health related claims. In order to evaluate the merit of published information, students will learn how data should be summarized numerically and graphically. Students will understand the power and, perhaps more importantly, the limitations of basing a health (or any type) claim on just a sample from the population of interest. Students will be prepared to analyze sample data sets and communicate appropriate conclusions as well as evaluate and critique published statistical findings.

Intended Learning Outcomes: By the end of this course, successful students will be able to ...

... use the methodologies of statistics to investigate a topic of interest and make decisions based on the results.

... use the methodologies of statistics to design and carry out a simple statistical experiment.

... use the methodologies of statistics to critique statistical information presented in news media.

... articulate the importance and limitations of using data and statistical methods in decision making.

... write about course topics clearly and effectively

... interpret quantitative information related to course topic (health related issues)

Course Materials:

Primary Statistics Text:

Introductory Statistics by Illowsky and Dean

Download for free at <https://openstax.org/details/books/introductory-statistics>

Other Readings on Hand-outs/Postings

Writing Reference

Easy Writer, 6e by Lunsford

Minitab 19 statistical software package

Rental available at <https://estore.onthehub.com>

Scientific calculator (not cellphone calculator)

Inquire course management system

Attendance Policies:

Full attendance is expected. As stated in the Academic Catalog, “Every student is accountable for all work missed because of class absence. Instructors, however, are under no obligation to make special arrangements for students who are absent.” Also, anytime you come in late or leave during class you miss part of the course and you disrupt the educational experience for everyone else. Do this only in the case of emergency.

Overall Workload: In addition to the 3 hours of class time, you are expected to work outside of class for a minimum of 9 additional hours per week.

Tests/Exams:

There will be 6 tests on basic statistical concepts, techniques and readings. Make-up tests will be given only under *very* extenuating circumstances that prohibit you from physically appearing in the classroom. Dates for tests and the comprehensive final exam are listed on the Course Schedule (link on Inquire)

Daily Homework:

Assignments will be made following every class meeting. Most frequently, students will complete problems in the form of an Inquire quiz. Occasionally, daily work must be written-up and brought to class for grading and/or discussion. All daily assignments will be posted on Inquire along with any particular instructions. The lowest Inquire Quiz score and the lowest written-up daily score will be dropped.

Statistical Project & Report:

Students will carry out a simple statistical study related to a health issue. This will be completed in installments throughout the semester and culminate in a final report.

Other Graded Work:

Items in this category will have varying point values. The average for this category will be determined as the percentage of points earned. Types of work include:

In-class Quizzes – No make-ups, drop the lowest score

Writings will be based on health related articles and issues that involve statistics. Requirements may vary and will be detailed for each assignment.

Minitab 19 assignments

Late Work Policy No work will be accepted (for any reason) for any assignment after class grades are posted for that assignment.

Inquire Policy Students are required to be knowledgeable of all postings on Inquire. It is each student’s responsibility to consistently monitor Inquire for course information. This means every day!

Any assignment that requires an Inquire upload will not be accepted in any other form. Also, to receive credit for uploads, the file must be readable on the instructor’s college computer. It is the student’s responsibility to make successful submissions. It is the student’s responsibility to resolve technology problems through the college’s IT department.

Academic Integrity The college policy is fully supported. All tests and quizzes will be closed book and closed And notes. Writings and reports must be in each student’s own words. All work done for grade **Electronic Devices** must be done individually unless clearly specified otherwise.

The use of any electronic device during a quiz or exam is strictly prohibited. Exceptions will be clarified on a case by case basis. **Any use of a non-approved device during a quiz or exam will be considered a breach of academic integrity.**

In-class use of cellphones/laptops/iPads/tablet computers is not permitted unless the instructor makes a specific exception for a particular class activity.

Grading Policy

Course Averages:

Test Average	50%	A 93-100	B- 80-82	D+ 67-69
Daily Homework	10%	A- 90-92	C+ 77-79	D 63-66
Other Graded Work	10%	B+ 87-89	C 73-76	D- 60-62
Statistical Project	10%	B 83-86	C- 70-72	F below 60
Final Exam	20%			

IMPORTANT TO NOTE: The Inquire gradebook will be used for grade STORAGE only. Inquire will not be used in this course to calculate your official course average. Students may view individual grades on Inquire, but averages found there may not be accurate.

Note: Material, content, and scheduling are subject to change if deemed appropriate or necessary by the instructor.

INQ 240 – Spring 2020 Target Course Schedule

Dates	Text Coverage
January 13- January 27	Introduction Chapter 1 Sampling and Data Chapter 2 Descriptive Statistics Chapter 12 Linear Regression and Correlation
Wednesday, January 29	TEST 1
January 31 – February 10	Chapter 3 Probability Topics Chapter 4 Discrete Random Variables
Wednesday, February 12	TEST 2
February 14 – February 24	Chapter 5 Continuous Random Variables Chapter 6 Normal Distribution Chapter 7 Central Limit Theorem
Wednesday, February 26	TEST 3
Friday, February 28	Class Exploration
SPRING BREAK	
March 9 – March 16	Chapter 8 Confidence Intervals – Single Mean

Chapter 9 Hypothesis Testing – Single Mean

Wednesday, March 18

TEST 4

March 20 – March 30

Chapter 8 Confidence Intervals – Single Proportion

Chapter 9 Hypothesis Testing – Single Proportion

Chapter 10 Hypothesis Testing with Two Samples

Wednesday, April 1

TEST 5

April 3 – April 15

Chapter 11 Chi-Square Distribution

(No class April 10)

Chapter 13 One-Way ANOVA

Friday, April 17

TEST 6

Monday, April 20

Review for Final Exam

FINAL EXAMS:

Block 2 Class 2:00 – 5:00pm

Thursday, April 23

Block 3 Class 8:30 – 11:30am

Monday, April 27