

## ***Statistical Reasoning: Here's to Your Health!***

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**Office Hours:** By appointment: Monday & Wednesday 3:30-4:30 and Tuesday & Thursday 2:30-4:30  
Make appointments online at [jminton.youcanbook.me](http://jminton.youcanbook.me)

### **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 news stories and journal articles that include statistical information.
- ... 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 – ONE of the following:

*A Writer's Reference*, Diana Hacker RC Custom Edition

OR

*Easy Writer*, 6e by Lunsford

*Minitab Express* statistical software package

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

Scientific calculator (not cellphone calculator)

*Inquire* course management system available through MyRoanoke

## 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)

## In-class Work:

This grade category will consist of quizzes, in-class Minitab exercises, and other classroom exercises. There will be no make-ups, but the lowest grade in the Quiz/In-Class Work category will be dropped.

## Outside of Class Assignments (No work for grade accepted after class grades posted on Inquire)

**Daily Assignments:** Assignments will be made following every class meeting. Some problems are strictly “practice” for which students check their own work and monitor their own progress. Some problems must be written-up and brought to class for grading and/or discussion. Selected problems requiring the use of Minitab Express will be collected for grading. Occasionally students will complete problems in the form of an Inquire Quiz. Students are expected to complete all daily assignments whether graded or not. All daily assignments will be posted on Inquire along with any particular instructions.

**Class Preparation:** Includes reading ahead, internet research, and instructor videos as assigned

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

**Statistical Experiment & Report:** Design and carry out a simple study related to a health issue and analyze the results.

**Public Service Announcement:** (Small Group Assignment) Produce a video in the style of a public service announcement regarding a health issue. The message of the announcement must be supported by solid statistical research. The research must be mentioned in the video and justified in written form.

**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 And Electronic Devices** The college policy is fully supported. All tests and quizzes will be closed book and closed notes. Writings and reports must be in each student's own words. All work done for grade 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.

**Co-curricular Requirement** The Math, Computer Science and Physics department offers a series of discussions that appeal to a broad range of interests related to these fields of study. These co-curricular sessions will engage the community to think about ongoing research, novel applications and other issues that face our disciplines. There is a link to the dates and times for these sessions on Inquire.

Members of this class are encouraged to attend all appropriate talks; however participation in at least one of these sessions is mandatory. A response form is available on Inquire. Within one week of attendance, students must upload this completed form on Inquire. The score for this form counts as a Quiz and is not eligible to drop.

### Grading Policy

### Course Averages:

Test Average	45%	A 93-100	B- 80-82	D+ 67-69
In-class work	10%	A- 90-92	C+ 77-79	D 63-66
Outside of Class Assignments	25%	B+ 87-89	C 73-76	D- 60-62
Final Exam	20%	B 83-86	C- 70-72	F below 60

**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. Any averages you might see in Inquire for this course should not be trusted.

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

# INQ 240 – Block 5 Fall 2018

## Target Course Schedule

Dates	Topics from:
August 29 – September 12	Chapter 1      Sampling and Data Chapter 2      Descriptive Statistics Chapter 12     Linear Regression and Correlation
Friday, September 14	TEST 1
September 17 - 26	Chapter 3      Probability Topics Chapter 4      Discrete Random Variables
Friday, September 28	TEST 2
October 1 – October 8	Chapter 5      Continuous Random Variables Chapter 6      Normal Distribution Chapter 7      Central Limit Theorem
Wednesday, October 10	TEST 3
Friday, October 12	Video Presentations
FALL BREAK	
October 22 – October 31	Chapter 8      Confidence Intervals – Single Mean Chapter 9      Hypothesis Testing – Single Mean
Friday, November 2	TEST 4
November 5 – 14	Chapter 8      Confidence Intervals – Single Proportion Chapter 9      Hypothesis Testing – Single Proportion Chapter 10     Hypothesis Testing with Two Samples
Friday, November 16	TEST 5
November 19 – December 3	Chapter 11     Chi-Square Distribution Chapter 13     One-Way ANOVA
Wednesday, December 5	TEST 6
Friday, December 7	Review for Final Exam
Wednesday, December 12	<b>FINAL EXAM 2:00-5:00</b>