Statistical Reasoning: Here's to Your Health!

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Office Hours: By appointment: Monday & Wednesday 1:30-3:00 and Tuesday & Thursday 1:30-2:30
Make appointments online at **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 (link also on Inquire)
    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 except a required by federal law. 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)

Other Work:

In Class: 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 In-Class Work category will be dropped.

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 Project & 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 immediately 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.

Co-curricular   The Math, Computer Science and Physics department offers a series of discussions
Requirement   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.

Grading Policy   **Course Averages:**

Test Average	45%	A 93-100	B- 80-82	D+ 67-69
Other Work	35%	A- 90-92	C+ 77-79	D 63-66
Final Exam	20%	B+ 87-89	C 73-76	D- 60-62
		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.

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

INQ 240 – Spring 2019
Target Course Schedule

Dates	Text Coverage	
January 14- January 28	Introduction	
	Chapter 1	Sampling and Data
	Chapter 2	Descriptive Statistics
	Chapter 12	Linear Regression and Correlation
Wednesday, January 30	TEST 1	
February 1 – February 11	Chapter 3	Probability Topics
	Chapter 4	Discrete Random Variables
Wednesday, February 13	TEST 2	
February 15 – February 25	Chapter 5	Continuous Random Variables
	Chapter 6	Normal Distribution
	Chapter 7	Central Limit Theorem
Wednesday, February 27	TEST 3	
Friday, March 1	Video Presentations	
SPRING BREAK		
March 11 – March 18	Chapter 8	Confidence Intervals – Single Mean
	Chapter 9	Hypothesis Testing – Single Mean

Wednesday, March 20	**TEST 4**	
March 22 – April 1	Chapter 8	Confidence Intervals – Single Proportion
	Chapter 9	Hypothesis Testing – Single Proportion
	Chapter 10	Hypothesis Testing with Two Samples
Wednesday, April 3	**TEST 5**	
April 5 – April 15	Chapter 11	Chi-Square Distribution
	Chapter 13	One-Way ANOVA
Wednesday, April 17	**TEST 6**	
Friday, April 19	No Class – Good Friday	
Monday, April 22	Review for Final Exam	
Thursday, April 25	FINAL EXAM 2:00-5:00	