Note: Students who have completed Stat 202 may not take this course for credit. Students must receive a C or better in this course to declare a major in Business Administration. You may wish to discuss this with your advisor with regards to your major.

Course Description: Students will gain an understanding of how decision making is accomplished using modern statistical techniques. Topics include descriptive statistics, graphical techniques, elementary probability, estimation, inferential statistics, linear correlation, and regression.

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

Intended Learning Outcomes: By the end of this course. 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
…express themselves clearly and effectively in writing, using the concepts and language of statistics
…statistically describe health topics and their significance for understanding the natural world
…articulate the importance of the methodologies of statistics for understanding a topic in the natural world

Course Materials
Primary text: A First Course in Statistics, by McClave/Sinich, Roanoke College custom edition
In addition, we may use: New York Times on-line Health Section
Various magazines and newspapers available in the Fintel Library
Health Datasets from STARS: Creation of Statistical Resources from Real Datasets website, and the WHO website, among others
Minitab statistical software packages (available in college labs)
Scientific/graphing calculator

I expect you to keep notes, quizzes, tests, etc. in an organized notebook. Homework should be organized separately. It is your responsibility to get any notes missed when absent and to attempt any assignment that is given. You must have notes before seeing me for assistance after any absence.

Academic Integrity: You are expected to be familiar with the Academic Integrity Code as outlined in Academic Integrity at Roanoke College. I take this topic very seriously. Collaboration is only allowed on daily homework assignments or small group projects.

Classroom Policies: Cell phones and pagers must be turned off prior to entering class. You are not to send or receive text messages during class!! The use of any electronic device during a quiz, test, or exam is strictly prohibited. Calculators may be used on quizzes, tests, exam, and homework as indicated by the professor. You will not share calculators during evaluations!
Attendance Policy: Attendance is expected! If you miss 6 classes, you may be dropped from the course. I do not consider absences as excused/unexcused. I also feel very strongly about students being on time to class. Being tardy twice will count as one absence! When absent, you are expected to get all notes missed and to attempt all work. Information will be posted daily on Blackboard. Communication on this topic is extremely important.

Use of Blackboard: I do use Blackboard frequently to communicate with you. Assignments and announcements will be posted daily. I do post grades but do not use Blackboard to determine any final grades! I often post notes for upcoming material and the keys to all quizzes and tests. If you have trouble using Blackboard, please contact the Help Desk in IT. I also will e-mail you often-so please check your e-mails!

Special Needs: If you qualify for special services through Academic Services, please schedule a time to talk with me concerning your needs. Also, peer tutoring is available on campus. This includes subject tutoring and writing assistance.

Grading Policy: You will be evaluated in this course by your performance on quizzes, tests, a comprehensive exam, and homework assignments/projects/etc.

Homework:
Practice problems from the primary text and assigned readings will be given daily. This work is not optional. I frequently grade homework for effort. An effort grade is never dropped. I would grade writing assignments from the supplemental text for content and writing technique. This average will count 3% of the final grade. I will also take assignments from you during your tests/quizzes and grade ten selected problems for accuracy. This average will also count 3% of your final grade.

You will have writing assignments/projects that deal with your health issue of interest. The first of these will be a paper that will count 5% of your grade.

Supplemental minitab assignments will be given throughout the course. Minitab will be used to display statistics, simulate processes, and perform tests on data sets. The student will also interpret their results. This will count 4% of the final grade.

Small group assignments will include the designing and performing of a simple study related to a health issue. This will involve gathering data and testing of the appropriate hypothesis. The group will present a “scientific” report of their findings. This will count 4% of the final grade. Another small group assignment will be the compilation of a PSA concerning a health issue of interest. This will count 4% of the final grade.

This course also has a co-curricular requirement. The MCSP Department offers a series of discussions that appeal to a wide range of interests related to these fields of study. These sessions will engage the community to think about ongoing research, novel applications, and other issues that face our disciplines. Dates and times will be announced and posted on Blackboard. You must attend one of these lectures and write a one-page reflection paper regarding the presentation. This paper must be submitted within a week of the presentation. This will count 2% of the final grade.

Tests and exam: You will have three tests during the semester and a comprehensive final. The exam schedule is as follows: Block 1: April 26: 8:30-11:30 AM. Please plan accordingly!

Quizzes: I will give 5-8 quizzes during the semester. These typically count 50 points each. At the end of the semester, I will drop the lowest 100 points.

Grades will be assigned using:
<table>
<thead>
<tr>
<th>Grade</th>
<th>A 93-100</th>
<th>B- 80-82</th>
<th>D+ 67-69</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-</td>
<td>90-92</td>
<td>C+ 77-79</td>
<td>D 63-66</td>
</tr>
<tr>
<td>B+</td>
<td>87-89</td>
<td>C 73-76</td>
<td>D- 60-62</td>
</tr>
<tr>
<td>B</td>
<td>83-86</td>
<td>C- 70-72</td>
<td>F below 60</td>
</tr>
</tbody>
</table>

Grades will be averaged as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quiz average</td>
<td>10%</td>
</tr>
<tr>
<td>Homework average</td>
<td>25%</td>
</tr>
<tr>
<td>Tests (15% each)</td>
<td>45%</td>
</tr>
<tr>
<td>Final exam</td>
<td>20%</td>
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Note: Material, content, and scheduling are subject to change if deemed appropriate or necessary by the instructor!

Below you will find the sequence of topics covered and the approximate placement of quizzes and tests. Adequate notice will always be given for both. Journal entries, group assignments, reading assignments, projects, etc. will be assigned where appropriate.

**Chapter 1: Statistics, Data, and Statistical Data—all sections**

**Chapter 2: Methods for Describing Sets of Data**

- 2.1: Describing Qualitative Data
- 2.2: Graphical Methods for Describing Quantitative Data
- 2.3: Summation Notation

**Quiz #1**

- 2.4: Numerical Measures of Central Tendency
- 2.5: Numerical Measures of Variability
- 2.6: Interpreting the Standard Deviation
- 2.7: Numerical Measures of Relative Standing
- 2.8: Methods for Detecting Outliers
- 2.10: Distorting the Truth with Descriptive Techniques

**Quiz #2**

**Chapter 3: Probability**

- 3.1: Events, Sample Spaces, and Probability

**Test #1**

- 3.2: Unions and Intersections
- 3.3: Complementary Events
- 3.4: The Additive Rule and Mutually Exclusive Events
- 3.5: Conditional Probability

**Quiz #3**

- 3.7: Random Sampling

Chapter 4: Random Variables and Probability Distributions

- 4.1: Two Types of Random Variables
- 4.2: Probability Distributions for Discrete Random Variables
- 4.3: The Binomial Distribution

**Quiz #4**

**Test #2**

- 4.4: Probability Distributions for Continuous Random Variables
- 4.5: The Normal Distribution

**Quiz #5**

- 4.6: Descriptive Methods for Assessing Normality
- 4.8: Sampling Distributions
- 4.9: The Central Limit Theorem

**Quiz #6**

Chapter 5: Inferences Based on a Single Sample

- 5.1: Identifying the Target Parameter
- 5.2: Large-Sample Confidence Interval For a Population Mean
- 5.3: Small-Sample Confidence Interval for a Population Mean
- 5.4: Large-Sample Confidence Interval for a Population Proportion
- 5.5: Determining Sample Size

**Quiz #7**

**Test #3**
Chapter 6: Inferences Based on a Single Sample: Tests of Hypothesis
6.1: The Elements of a Test of Hypothesis
6.2: Large-Sample Test of Hypothesis About a Population Mean
6.3: Observed Significance Levels
6.4: Small-Sample Test of Hypothesis About a Population Proportion
6.5: Large-Sample Test of Hypothesis about a Population Proportion

Quiz #8

Chapter 10: Correlation and Regression
In this chapter, we will cover as much material as time allows.

Final Exam