It is easy to lie with statistics, but it is easier to lie without them.
attributed to Frederick Mosteller (1916 - 2006)

**Catalog description:** An introduction to the concepts of statistics. Topics include graphical and numerical summaries of data, confidence intervals and significance tests about hypotheses. Emphasis is placed on conceptual understanding and interpretation of data and statistics.

**Overview of course content:** Statistics is the science of reasoning from data. It is both an exciting intellectual discipline and a powerful scientific tool. Statistics is a mathematical science, in the sense that it makes use of mathematics extensively, but it is not a branch of mathematics. This course will introduce you to fundamental concepts and methods of Statistics. Some of the key ideas to be studied include data collection strategies and the scope of conclusions based on the collection strategy, the role of randomness in collecting data and drawing conclusions, graphical and numerical summaries of data, assessing statistical significance, and estimating with confidence.

This course is designed to introduce the student to concepts and applications of statistics. Statistics, the discipline, provides strategies and tools for using data to gain insight into problems. In this course, emphasis is placed on data analysis and interpretation of statistical test results.

The detailed learning objectives for each section of the course are listed on D2L. These objectives for the course can be summarized as:

1. Demonstrate that you can to read data critically and with comprehension.
2. Produce data that provide clear answers to properly posed questions.
3. Apply sound and appropriate statistical methods for drawing trustworthy conclusions based on the data.
4. Appropriately and statistically defend your descriptions and inferences about samples and populations.
5. Communicate the conclusions of statistical studies.

**Required text, software and other material:**

- Text - *Essential Statistics: Exploring the world through data* by Robert Gould and Colleen Ryan, Pearson, second edition, 2017. Check D2L for specific information on purchasing this text. You are required to have access to the on-line homework and either an e-text or paper copy of the text.
• MyStatLab - the portal to this course with access to the e-text, homework problems, study guide, on-line tests and quizzes. You purchase access to this portal.

• StatCrunch - software for the course, available through the portal or at www.statcrunch.com

• Calculator - you won’t be able to use your cellphone for calculations during exams.

Expectations:

Prior to class
• The course will be taught as a modified “flipped course.” In this case, you will have daily specific assignments to do prior to coming to class. Homework questions will be assigned on the reading or video. These assignments will include reading portions of the text or watching videos and are expected to take between 30 minutes and one hour. You may watch the read the material or watch the video and take the quiz at the same time.

In class

The majority of class time will be spent on activities and assignments that reinforce and further explain the material you prepared before class. I expect you to

• turn off your cell phone and computer unless you are using the statistics package
• actively participate with at least one partner
• stay focused on the class material

After class

• Summarize the content of class in your own wording by completing the learning objective quiz on D2L
• Do the homework problems assigned on the class material (due at the 7 am each class day)

Assessment and Evaluation No late work will be accepted!

1. Work done between classes

(a) Label is Homework - Questions on reading and/or videos.
Assigned daily and due at 7 am the next class day. This portion of the evaluation is accessed via the MyLab Pearson portal. You should assume that you have reading assignments for each class period. You may assume that any homework due on the next class period will be posted by noon of the class day. For example, material due on Wednesday will be posted by noon on Monday. Every assignment in the section is equally weighted and will be labeled as “homework” on the portal. You will be offered several attempts to correctly answer the questions. Grades from the portal will be transferred to the D2L gradebook when exam grades are recorded.
(b) Label is **Quiz** - Problems done after class work. Assigned daily and due at 7 am the next class day. This portion of the evaluation is accessed via the MyLab portal and will be assigned AFTER the material is discussed in class. Every assignment in the section is equally weighted and will be labeled as "quiz" on the portal. Grades from the portal will be transferred to the D2L gradebook when exam grades are recorded.

(c) Label is **Learning Objective** - Learning objective **D2L quiz**
This work keeps track of attendance and participation and helps you develop a study guide. Each class day you will fill out a brief questionnaire on the material of the class. The questionnaire is due by noon the next day. (For a Wednesday class, the material is due on Thursday at noon. For a Friday class, the material is due on Saturday at noon.) You start with a grade of 100% and lose points in this section. All students are allowed one unexcused absence. For each excused absence (see the Undergraduate catalog for acceptable excuses) you will lose 1% and may fill out the questionnaire based on your friend’s notes. Unexcused absences have increasing point loss and you will not have the chance to make up the D2L questionnaire work. The second unexcused absence is a loss of 4% for this section of your grade, the third a loss of an additional 8%, fourth an additional 16%, fifth an additional 32%, continuing doubling with each absence.

The questionnaire will be graded sufficient or not sufficient. Not sufficient will result in a loss of 2%. My feedback will be available for one week after the survey is done.

(d) Label is **Writing Assignment** - Approximately 5 writing projects will be assigned throughout the semester. These projects will have specific details given when assigned. They may include reading a brief paper, listening to a podcast or watching a video and solving problems beyond those found in the textbook. Typically this work will be uploaded to D2L dropboxes.

2. Exams

(a) Exam 1 after Chapters 1-3 are completed estimated early-February.
(b) Exam 2 after Chapters 4-6 are completed estimated February 28th
(c) Exam 3 after Chapter 7-8 are completed estimated mid-April
(d) Final Exam, comprehensive, Tuesday, May 8 11:30 am

Any makeup exams will be substantially harder. The procedure outlined on the page in Undergraduate Catalog regarding Absences from Examinations must be followed.

**Integrity**

Central to the purpose and pursuit of any academic community is academic integrity. All members of the Westminster community, including students, faculty, staff, and administrators, are expected to maintain the highest standards of honesty and integrity, in keeping with the philosophy and mission of the College. Academic dishonesty is a profound violation of this code of behavior.
The paragraph above is taken from the Westminster College Undergraduate Catalog. It is imperative that you never submit the work of others as though it is your own work nor should you ever allow anyone else to use your work without giving credit to you. The penalty for academic dishonesty in this class is minimally the grade of 0 on the assignment and, except for unusual circumstances, a grade of F for the course. Any event of academic dishonesty is reported to the Dean of the College. Other details of violations and consequences are given in the Catalog.

*All on line homework is to be done individually. Note that MOST of that homework comes from the exercises in your text. You ARE allowed to discuss any exercises in the text with your classmates prior to beginning the on line homework.

Accessibility
Students who have special needs that may affect their academic or personal life should seek resources on campus to assist them, such as Disability Support, the Learning Center, Diversity Services, and Library Instruction. In this course, accommodations consistent with college policy will be made for students who are utilizing appropriate support services. After consulting with the appropriate support service, students are encouraged to speak with me in a confidential appointment about necessary accommodations.

Note: Drop-in tutoring is available Sunday through Thursday night in Hoyt 164, the seminar room area in the Mathematics office area.

Grade Calculations:

Grading Breakdown

Homework on Reading 10%
Homework after class (quiz) 10%
Learning Objective Summary 20%
Writing Assignments 10%
Exams 50%

The lowest mid-term exam grade is dropped. The other two mid-term exams are weighted 15% each. The final exam is cumulative and is weighted 20%.

Grading Assignment
Grade cutoffs
A: 93, A-: 90 B+: 87, B: 83, B-: 80, C+: 77, C:73, C-: 70, D: 60.

How to get an A in this class

1. In a flipped classroom work is to be done BEFORE every class on new concepts. Plan to do that work.

2. Carefully read the text before class. One of the reasons the text was chosen because I believe it is at a very easy reading level and can be read for understanding.
3. Don’t just DO the activity in class to get it done. Seek to understand WHY it was assigned to illustrate the concepts of the day. I’ll summarize these points; you should be taking notes whenever I’m talking.

4. Do the D2L quiz on learning objectives of the class as soon as possible AFTER the class.

5. Do every homework question the day assigned not late at night the day before it is due.

6. If you get the homework problem wrong, do all the similar questions until you get the concept correct.

7. Use the resources that are available on MyStatLab.

8. Keep track of the problems you can’t do and categorize WHY you can’t do them. See me to get help with the concept misunderstood which will allow you to finish the problems you can’t do.

9. If you can’t get to my office hours, go to the drop-in tutoring available Sunday through Thursday.

10. I expect this class to be both educational and enjoyable. Statistics can be a lot of fun. Keep a positive attitude even when you are frustrated.

See you in class!