Course Description: This course is a four credit course designed to introduce the student to the basic principles, techniques and the logic of data analysis. It also will familiarize the student with statistical reasoning. This course focuses on core statistical concepts and techniques that are used in many fields.

Course Objective: This course focuses on knowledge and skill development in the statistical area. The course is designed to meet the following learning objectives:

Knowledge
- Understand mathematical models, graphs, tables and schematics and how to interpret and draw inferences from them.
- Recognize and interpret mathematical information when presented symbolically, visually, numerically or verbally.
- Understand alternatives that can be used in mathematical or statistical analysis and how to achieve optimal results.
- Recognize the limits of mathematical and statistical models and be able to explain how those limits affect everyday decision making.
- Understand how mathematical and statistical information can assist in analysis, syntheses and evaluation of complex urban problems.

Skills
- Use arithmetic, algebraic, geometric, and statistical models to solve problems.
- Understand how to calculate formulae.
- Use technology to solve mathematical and statistical problems as well as to prepare graphs and charts.
- Develop the means used to estimate and check answers to mathematical problems.
- Represent mathematical information in a symbolic, visual, or verbal manner that has clarity of result.

General Education Statement: This course fulfills a Quantitative Literacy General Education requirement

Course Requirements: Students are expected to attend all class periods, submit homework assignments when due, complete all learning enhancers and the midterm and final. The student will also analyze a research article. Student success is enhanced by keeping up to date with required readings. The book for this class is used with the course. Learning statistics without a book is difficult at best. You are required to turn in 2 questions regarding the material in for each of chapters 2
through 6. Without a text, this is not possible. A copy of the text will be on reserve in the library. You can use it in the library for 2 hours at a time. Attention to assignment deadlines is also critical to the student being successful. Students are also strongly encouraged to make use of the .pdfs found on Blackboard that walk you through calculations of the formulae. When PowerPoint is used in class, there will be a corresponding .pdf file for your use. These are accessible in .pdf format (3 up with lines for taking notes). The student can access them from home or school via the internet by going to Blackboard LEARN. The login web address is https://bblearn.csuohio.edu/MACAuth/login.jsp

The most common problem that students have with Blackboard is the result of not allowing “pop-ups” from the Blackboard site. You will need to do this to view any of the documents on the site.

Course Method: This class is designed to provide the student with a number of tools that can be used for self-assessment as you work through the material.

--The chapter reading questions are designed to assist students to read the chapters in their book and to ask questions to clarify areas that are confusing or unclear to them. These questions will be answered on the discussion boards for the chapters. If there is a concept that a significant number of the students are having difficulty with, I will tape a lecture around the question and then notify the class to access it on the mediasite. I may also use Tegrity to post answers that can be done in a short form. These questions should be emailed to me by the date that they are due. You are required to submit at least 2 questions for chapters 2 through 6. I do encourage more questions if you have them but this is the minimum that I will require from each of you.

--The homework is a means to assist the student in determining what out of the lectures, readings and postings that they might not have understood, as well as to provide additional practice in some of the calculations and interpretations. You may email the homework to me. I suggest that you scan your work. Please be sure that we can READ your scanned copy. Sometimes pencil calculations are very light on your paper and will not scan well. We need to be able to read the work that you have done. If you cannot scan the homework, you may mail it to me or leave it in my mailbox in the urban building. The page numbers and questions that are required for each chapter appear at the end of the syllabus. Due dates are noted in the syllabus.

--The now you try it practice assignments provide the student the means to work on solving questions that build on the homework and also reflect what will appear on the learning enhancers, midterm and final. These will be turned in for review but are not graded; students receive credit for simply doing them. Detailed answers will be posted for the student to check their work. These should be scanned and emailed to me or mailed or left it in my mailbox in the urban building by the due dates noted in the syllabus. As long as you have attempted to answer each question to the best of your ability, I will give you full credit. Since answers to these are posted the day after they are due, I cannot accept late assignments.
--The learning enhancers allow the student to have a "practice" test before the material is covered on their midterm and final. Since they are only worth 5% or 5 points towards your final grade, if you do not do well, they will not impact your final grade as heavily as the midterm and final. These also assist the instructor in determining what material might need to be reviewed to clarify areas of confusion before you take the midterm or final. These are timed and will be taken on Blackboard. You will have 1 hour for each enhancer. I will post a review sheet before the enhancer that will explain what the enhancer will cover. I strongly suggest that you make up notes that cover these areas before you take the enhancer. Many times students cannot complete the enhancers because they are attempting to look up how to do calculations while in the middle of the enhancer. Although you will only post your final answer for the questions, I will need to see your calculations when I grade your enhancer since partial credit is possible. Please scan and email them to me when you complete the enhancer. The enhancer will be available on Saturday and Sunday to accommodate work schedules. However, once you begin the enhancer, you will have to complete all of your work within the time allotted.

The midterm and final are traditional tests that should reflect what you have learned and corrected going through the self-assessment items. These also are timed. I will post review sheets before the tests are given. Once again I strongly suggest that you make up notes before taking the tests. These will be accessible on Saturday and Sunday of the weekend they are due and will require you to do the complete test within the time allotted. Once you start the test, you must finish it within the time allotted. As with the enhancers, I will need to see your calculations when I grade your test. Please scan and email them to me when you complete the test.

I strongly recommend for the learning enhancers and the midterm and the final, that you create at least 2 pages of notes with procedures to do the calculations. Attempting to find and understand the material in the book when taking a timed test generally does not leave you enough time to finish.

The four learning enhancers and the midterm and final will be given as noted in the syllabus. Homework questions will be posted on Blackboard. Due dates for homework are as noted in the syllabus. Practice assignment dates are noted in the syllabus as well.

Due dates shown in the syllabus are the last possible date the assignment can be submitted.

Copies of your work to compute your answers for the practice assignments, the learning enhancers and the midterm and final should be scanned and emailed to me. They may also be mailed to Cleveland State University, Attn: Winifred Weizer, 2121 Euclid Ave UR360, Cleveland Ohio 44115. Mailing the information can delay the grading of your work until I receive the material.

Discussion boards will be used to help clarify the material as well as Tegrity lectures or additions to the Lightboard lectures.
Grading Policy: Grades are based on the results of homework, learning enhancers, practice assignments, project, midterm, and final. The grade will consist of the following:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading questions</td>
<td>5%</td>
</tr>
<tr>
<td>Practice Assignments</td>
<td>10%</td>
</tr>
<tr>
<td>Homework</td>
<td>10%</td>
</tr>
<tr>
<td>Article review</td>
<td>10%</td>
</tr>
<tr>
<td>4 learning enhancers</td>
<td>20% (5% each)</td>
</tr>
<tr>
<td>Midterm</td>
<td>20%</td>
</tr>
<tr>
<td>Final</td>
<td>25%</td>
</tr>
</tbody>
</table>

Exams are required to be completed on the assigned dates. Makeup exams will be given only with prior approval of the instructor.

Grading scale: 94-100 A  93-90 A-  89-87 B+  86-83 B  82-80 B-  79-77 C+  76-70 C  60-69 D

Note: The instructor reserves the right to adjust and modify the syllabus as needed throughout the semester. Attendance guarantees that the student will be apprised of all changes.

The four learning enhancers and the midterm and final will be given as noted in the syllabus. Homework questions due for each chapter will be noted. Homework will be posted in a separate folder under course content.

A special note on homework. You ignore homework at your peril. If you choose not to submit your homework, you will lose a total of 10 points off of your final grade. Students have found that the homework points can mean the difference between a passing grade in the class versus one that they prefer not to have. Homework due dates are assigned after we complete the chapter in lecture. Once the Chapter is done, I will announce the due date. I will accept late homework for a chapter up to the date of the learning enhancer that covers that chapter through Chapter. Final dates for the remaining chapters will be announced in class. NO homework will be accepted at the final! (Absolutely, positively, don’t even think about it!) Homework is graded. PLEASE! Be neat. You will not receive credit for answers that we cannot read or that are ambiguous.

I have placed videos that cover the material at the following site. Please use these to review material that you find confusing or that you need additional guidance on. These do NOT take the place of class, they are meant to be a supplement to the course material. We have set these lectures as single concept or step items so they are no longer than 8 minutes in length. Since these are relatively new, I would appreciate your feedback regarding them as you use them. We are updating them as we go through the semester. I will notify you via Blackboard announcement or email if there are changes.

Please Note: The book was changed in Fall, 2016. Some of the videos may carry references to different chapter numbers. Please ignore this. The actual content is appropriate and valid for use.
I have also put up the PowerPoint slides that I use when I teach the class face to face. These do have step by step instructions for how to do some of the required calculations.

**Tutor:** Thomas Sacharski is the tutor for this class. He is doing all of our 404/504 sections. He will be sending out an email with dates and times of the tutoring. As long as one student signs up the tutoring session will occur. If you intend to come, be sure to let him know since if no one signs up the session is cancelled. If you have signed up and cannot make the session, email Tom. If it is the day of the session, please call 216-702-8300 and leave a message that you will be unable to attend.


**Class Schedule and Readings**

**Week 1: January 16 to January 20:** Course introduction, Introduction to Statistics
- **Read:** Chapter 1 and Chapter 2 (Disregard the material on midpoint and fx, we will cover some of that in Chapter 3).
- **January 16:** Martin Luther King Day, NO Class
- **January 20** Last day to join course waitlist
- **January 20** Last day to drop with full refund

**Week 2: January 23 to January 27:** Finish Introduction to Statistics, Practice Assignment 1, Summarizing and Organizing Data
- **January 22:** Last day to add (CampusNet Registration)
- **January 27** Last day to drop - (Course withdrawal period begins on the 28th)
- **January 28:** Chapter 2 Reading Questions are due
- **January 28:** Practice Assignment 1 is due
- **January 28:** Chapter 1 Homework is due

**Week 3: January 30 to February 3:** Finish Summarizing and Organizing Data, Practice Assignment 2, Review for Learning Enhancer 1 Posted
- **Read Chapter 3, Pages 57-66, Page 70 Outliers to page 85.**
- **February 4:** Chapter 2 homework is due
- **February 4:** Practice Assignment 2 is due

**Week 4: February 6 to February 10:** Descriptive Statistics, Learning Enhancer 1 – covers Chapter 1 and 2 (Last day for Homework for Chapter 1 and 2), Read Chapter 4
- **February 11:** Chapter 3 Reading questions are due
- **February 11-12:** Learning Enhancer 1: Covers chapters 1 to 2

**Week 5:** February 13 to February 17: Finish Descriptive Statistics, Practice Assignment 3, Review for Learning Enhancer 2 is Posted, Start Standard z scores
Read Chapter 5 Pages 125 to 133, 147 to 159
February 18: Chapter 4 Reading questions are due
February 18: Practice Assignment 3 is due
February 18: Chapter 3 homework is due

Week 6: February 20 to February 24: Learning Enhancer 2 – covers Chapters 3, (Last day for Homework for chapter 3), Finish Standard Z scores, Practice Assignment 4, Basic Principles of Probability
February 20th President’s Day NO CLASSES
February 25-26: Learning Enhancer 2 Covers chapter 3
February 25: Chapter 5 Reading questions are due
February 25: Practice assignment 4 is due

Week 7: February 27 to March 3: Finish Basic Principles of Probability, Practice Assignment 5, Review for Midterm Covers Chapters 1 to 3.
Read Chapter 6, Pages 169 – 175, Chapter 7
March 4: Practice assignment 5 is due
March 4: Chapter 4 homework is due

Week 8: March 6 to March 10: Midterm (Covers Chapters 1 – 3), Standard Error, Central Limit Theorem, Start Hypothesis Testing, Review for Learning Enhancer 3 (covers Chapters 4-5)
March 11-12: Midterm (Covers Chapters 1 – 3)
March 11: Chapter 5 homework is due

March 12 through March 19: Spring Break – No class

Week 9: March 20 to March 24: Learning Enhancer 3 (Last day for Chapter 4 and 5 homework), Finish Hypothesis Test of a mean standard deviation known, Practice Assignment 6
Read: Chapter 8
March 25-26: Learning Enhancer 3 (Covers Chapter 4 and 5)
March 25: Practice Assignment 6 is due
March 25: Chapter 7 homework is due

Week 10: March 27 to March 31: One Sample t Test When α is unknown, (Hypothesis tests and Confidence intervals)
Read: Chapter 11
March 29: Last day to withdraw
April 1: Chapter 8 homework is due
Week 11: April 3 to April 7: Practice Assignment 7, Correlation, Start Simple Regression
Read Chapter 12
April 8: Practice Assignment 7 is due
April 8: Chapter 11 homework is due

Week 12: April 10 to April 14: Finish Simple Regression, Practice Assignment 8, Start One Way Analysis of Variance
Read Chapter 13
April 15: Practice Assignment 8 is due
April 15: Chapter 12 homework is due

Week 13: April 17 to April 21: Finish One Way Analysis of Variance, Practice Assignment 9, Review for Learning Enhancer 4 (Covers Chapter 7, 8, and 11)
Read Chapter 14
April 22: Practice Assignment 9 is due
April 22: Article Review is due

Week 14: April 24 to April 28: Chi Square Tests for Goodness of Fit and Independence Learning Enhancer 4 (Last day to submit homework for Chapters 7, 8 and 11)
April 29-30: Learning Enhancer 4

Week 15: May 1 to May 5 Practice Assignment 10, Final Thoughts
May 6: Practice Assignment 10 is due
May 6: Chapter 14 homework is due
May 6-7: Final

Change in schedule/requirements: This syllabus is a guide to the semester schedule and its requirements. The instructor reserves the right to change this syllabus and any of its contents at any time during the course by notifying students verbally, by written addendum or by announcements through Blackboard.

Note: Students are strongly encouraged to email the Instructor with questions or problems they may be having. I am on campus most days of the week. I check my email on a daily basis even when I am not on campus. Many questions can be resolved if you email me. I am happy to respond.

Questions regarding the university calendar (holidays and finals week schedule) can be resolved by using the following link to the registrar’s office.

http://www.csuohio.edu/enrollmentservices/registrar/calendar/index.html
University Policies
Students should refer to the Undergraduate Bulletin for procedures regarding add/drop and withdrawals and any other policies that may apply.

Physically challenged/Special Needs
*Educational access is the provision of classroom accommodations, auxiliary aids and services to ensure equal educational opportunities for all students regardless of their disability. Any student who feels he or she may need an accommodation based on the impact of a disability should contact the Office of Disability Services at (216)687-2015. The Office is located in MC 147. Accommodations need to be requested in advance and will not be granted retroactively.*

Test taking/academic challenges: The University counseling center provides Academic counseling for students. Workshops are run throughout the semester to assist you in maximizing your note taking skills, test taking skill, assisting with test anxiety reduction, and managing time. The links below will take you to the Fall schedule which should be posted during the first week of classes.

http://www.csuohio.edu/counselingcenter/academic-skills-development-workshops-0

Workshops on improving academic success are also offered through the Tutoring Center as well as tutoring for some specific course content. Information on the Tutoring Center can be found at

http://www.csuohio.edu/academic/advising/tutoring/

*Homework - Assignments are posted on Blackboard.*