General Information
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Office hours: Tuesday 3:30-5:30 pm, or by appointment, UR 316

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

Learning Objectives
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, and statistical models to solve problems.
- Understand how to calculate formulae.
- 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 Text

You will not need an access code for the textbook, so feel free to buy a used version or rent the book if that is your preference. In addition, a copy of the textbook is available on 2-hour reserve in the library.

Course Method
Students are expected to attend all class periods, submit homework assignments and the problem set when due, complete all learning enhancers, and take the midterm and final exams. Student success is enhanced by keeping up to date with all readings and homework assignments. Class attendance is also critical to successful completion of the course.

This course is designed to provide students with a number of tools that can be used for self-assessment. The *homework* and *comprehensive problem set* are a means to assist students in determining what out of the lectures they might not have understood, as well as to provide additional practice in some of the calculations and interpretations. The *group projects* provide students the means to work as a group in solving questions that build on the homework and also reflect what will appear on the learning enhancers, midterm, and final. The *learning enhancers* allow the student to determine if their notes are adequate to assist them in solving the problems before they take their midterm and final. These tools also assist the professor in determining what material might need to be reviewed to clarify areas of confusion.

Students may use two 8.5x11 sheets of paper (back and front counts as two sheets) of notes during each exam, including the learning enhancers. Students may also use a calculator. At a minimum, your calculator should be able to perform basic mathematical operations, exponents, and square roots. *Cell phones are not permissible as a calculator for exams.* The professor will not have extra calculators.

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 12 percentage points off your final grade. Students have found the homework points can mean the difference between a passing grade in the class versus one they prefer not to have. The assignments are on Blackboard in the “Homework” folder. Homework is due at the beginning of class, as specified in the Course Schedule. Homework is graded on a check plus (5 points), check (4 points), check minus (3 points) scale, as discussed in class. Please be neat and show all your work. You will not receive credit for answers that I cannot read or that are ambiguous. I will not provide a lot of feedback on your homework, but answer sheets will be posted on Blackboard in the Homework folder at 6 pm the Saturday after they are due. It is your responsibility to check your answers.
**Course Requirements**
Grades are based on the results of class attendance, homework, comprehensive problem set, group projects, learning enhancers, midterm, and final. The grade will consist of the following:

- Attendance: 5%
- Homework: 12%
- Comprehensive Problem Set: 3%
- Group Projects: 12% (3% each for your 4 highest grades)
- Four Learning Enhancers: 28% (7% each)
- Midterm: 20%
- Final: 20%

There are five group projects. Each student’s lowest group project score will be dropped. There are no opportunities to make up group projects. If you miss a group project, it will count as a 0. However, one 0 or your lowest group project score will not count towards your final grade.

**Grading Scale**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Range</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>94 – 100</td>
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<tr>
<td>A-</td>
<td>90 – 93</td>
</tr>
<tr>
<td>B+</td>
<td>87 – 89</td>
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<tr>
<td>B</td>
<td>83 – 86</td>
</tr>
<tr>
<td>B-</td>
<td>80 – 82</td>
</tr>
<tr>
<td>C+</td>
<td>77 – 79</td>
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<tr>
<td>C</td>
<td>70 – 76</td>
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<tr>
<td>D</td>
<td>60 – 69</td>
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<tr>
<td>F</td>
<td>59 or less</td>
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The professor will only give incomplete “I” grades to students if the student and professor have arranged it before grades are due. Students will only receive an I if they have documentation proving they are unable to complete the course through no fault of their own and they are generally passing the class (C grade or higher). Students receiving an I will sign a contract with the professor detailing what they must do to complete the class and the day by which they will complete it. If the student does not complete the class by the date in the contract, the grade will become an F. According to the Registrar’s Office, the last day to complete a course is the last day of classes of the next term.

Please refer to the CSU Registrar’s Office for more information on I grades. Grades will only be changed after they are submitted to the Registrar in cases of clerical error.

There are no extra credit assignments. Your grade will be based on the credit you earn for each assignment.

**University Deadlines**
- Last day to drop for a full refund is January 20, 2017
- The deadline for adding a course is January 22, 2017
- The deadline for dropping a course is January 27, 2017
- The last day to withdraw from the course is March 31, 2017
- The final examination week is May 6-12, 2017

Please check the CSU Academic Calendar to confirm all dates.
Course Schedule
This syllabus is intended as a guide to the course for the student. Sound educational practice requires flexibility and the professor may, with appropriate notice, change content and requirements at any time during the course. Attending class and checking your email and Blackboard regularly are the best ways to be informed of any changes.

Course Schedule at a Glance

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Chapter covered</th>
<th>HW due</th>
<th>Exam</th>
<th>Group project</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1/18</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2</td>
<td>1/25</td>
<td>1, 2</td>
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<tr>
<td>3</td>
<td>2/1</td>
<td>3</td>
<td>1, 2</td>
<td></td>
<td>1 (Ch. 1 &amp; 2)</td>
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<tr>
<td>4</td>
<td>2/8</td>
<td>4, 5</td>
<td>3</td>
<td>LE 1 (Ch. 1 &amp; 2)</td>
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<tr>
<td>5</td>
<td>2/15</td>
<td>5</td>
<td>4</td>
<td></td>
<td>2 (Ch. 3-5)</td>
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<tr>
<td>6</td>
<td>2/22</td>
<td>6, 7</td>
<td>5</td>
<td>LE 2 (Ch. 3-5)</td>
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<tr>
<td>7</td>
<td>3/1</td>
<td>7</td>
<td>6</td>
<td></td>
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<tr>
<td>8</td>
<td>3/8</td>
<td></td>
<td></td>
<td>Midterm (Ch. 1-5)</td>
<td></td>
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<tr>
<td>9</td>
<td>3/15</td>
<td>Spring break—no class</td>
<td></td>
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<tr>
<td>10</td>
<td>3/22</td>
<td>8</td>
<td>7</td>
<td></td>
<td>3 (Ch. 6-8)</td>
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<tr>
<td>11</td>
<td>3/29</td>
<td>11</td>
<td>8</td>
<td></td>
<td></td>
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<tr>
<td>12</td>
<td>4/5</td>
<td>12</td>
<td>11</td>
<td>LE 3 (Ch. 6-8)</td>
<td></td>
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<tr>
<td>13</td>
<td>4/12</td>
<td>13</td>
<td>12</td>
<td></td>
<td>4 (Ch. 11 &amp; 12)</td>
</tr>
<tr>
<td>14</td>
<td>4/19</td>
<td>Review session</td>
<td>13</td>
<td></td>
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<tr>
<td>15</td>
<td>4/26</td>
<td>14</td>
<td></td>
<td>Comprehensive problem set</td>
<td>LE 4 (Ch. 11-13)</td>
</tr>
<tr>
<td>16</td>
<td>5/3</td>
<td>Wrap up</td>
<td>14</td>
<td></td>
<td>5 (review)</td>
</tr>
<tr>
<td>Finals</td>
<td>5/10</td>
<td></td>
<td></td>
<td>Final (Ch. 6-8, 11-14)</td>
<td></td>
</tr>
</tbody>
</table>
Week 1, January 18  
Course introduction  
Samples, variables, and measurement  
Introduction to urban datasets  
Read: Chapter 1 (pp. 1-11)  
Homework Due: None

Week 2, January 25  
Variables, statistical notation, order of operations  
Frequency tables, graphs, data distributions  
Read: Chapter 1 (pp. 11-17), chapter 2  
Homework Due: None

Week 3, February 1  
Measures of central tendency  
Measures of variability  
Review for Learning Enhancer 1  
Group Project 1 (covers chapters 1 & 2)  
Read: Chapter 3 (pp. 57-66, 69-85)  
Homework Due: Chapters 1 & 2

Week 4, February 8  
Z-scores  
Probability  
Learning Enhancer 1 (covers chapters 1 & 2)  
Read: Chapter 4 (skip example 4.5), chapter 5 (pp. 147-159)  
Homework Due: Chapter 3

Week 5, February 15  
Probability  
Review for Learning Enhancer 2  
Group Project 2 (covers chapters 3-5)  
Read: Chapter 5 (pp. 125-147)  
Homework Due: Chapter 4

Week 6, February 22  
Sampling error and the Central Limit Theorem  
Hypothesis testing  
Learning Enhancer 2 (covers chapters 3-5)  
Read: Chapter 6, chapter 7  
Homework Due: Chapter 5

Week 7, March 1  
Hypothesis testing  
One-sample t test  
Review for Midterm  
Read: Chapter 7  
Homework Due: Chapter 6
Week 8, March 8  
Midterm (covers chapters 1-5)

Week 9, March 15  
Spring break—no class

Week 10, March 22  
One-sample $t$ test  
*Group Project 3 (covers chapters 6-8)*  
*Read: Chapter 8*  
*Homework Due: Chapter 7*

Week 11, March 29  
Correlation  
*Review for Learning Enhancer 3*  
*Read: Chapter 11 (pp. 328-354, skip correlation given z-scores)*  
*Homework Due: Chapter 8*

Week 12, April 5  
Regression  
*Learning Enhancer 3 (covers chapters 6-8)*  
*Read: Chapter 12*  
*Homework Due: Chapter 11*

Week 13, April 12  
Analysis of variance (ANOVA)  
*Group Project 4 (covers chapters 11 & 12)*  
*Read: Chapter 13 (pp. 422-437, 442-444)*  
*Homework Due: Chapter 12*

Week 14, April 19  
Review session  
*Review for Learning Enhancer 4*  
*Homework Due: Chapter 13 (bring to class or email it to me by 6 pm)*

Week 15, April 26  
Chi-square tests  
*Learning Enhancer 4 (covers chapters 11-13)*  
*Comprehensive problem set due*  
*Read: Chapter 14*  
*Homework due: None*
Week 16, May 3
Wrap up
Review for Final Exam
Group Project 5 (review)
Read: Review chapters 6-8, 11-14
 Homework due: Chapter 14

Final Exam, May 10, 6-8 pm (Covers chapters 6-8, 11-14)

Classroom Policies
Attendance
Attendance and punctuality are expected. You may miss two class without documentation without penalty. A third absence will yield a 75% on your attendance grade, four absences will yield a 50%, and five or more absences will yield a 0. Arriving late and/or leaving class early twice counts as an absence. Assignments that are due on days in which you are absent must be submitted prior to the start of class (e.g. 6 pm on Wednesday). If you miss class or are late, please make sure you get notes from a classmate.

Late Assignments
Assignments must be turned in on the date they are due unless you made prior arrangements with me. Unless otherwise noted in this syllabus, all assignments are due by the beginning of class. Late assignments will be reduced by 10 percentage points for each day (6 pm to 6 pm) or part thereof it is late. For example, if an assignment is due at 6 pm on Wednesday, and you send it to me at 1 pm on Thursday, your grade will be reduced by 10 percentage points. I will not accept assignments more than three days late.

Make-up Assignments
Make-up of exams (learning enhancers, midterm, and final) is at the discretion of the professor and only with written documentation such as a doctor’s note. Typically, make-up assignments will only be given in extraordinary circumstances, which are situations that could not have been reasonably anticipated. Except in absolute emergencies, you must inform me that you will be missing an exam prior to the deadline. There are no make-ups for group projects, homework, or the comprehensive problem set.

Tutoring
Tutoring is available. More information on the tutor is available on Blackboard. The tutoring sessions are open to all UST 404 and 504 students. You are required to email the tutor if you plan to attend a tutoring session. If no one responds, the session will be canceled. If you confirmed but are later unable to attend a session, you must email the tutor.

Students are strongly encouraged to email the professor or visit office hours with questions or problems they may be having. This class is cumulative; therefore, if you do not understand an early concept, later topics will be more difficult. It is always better to seek out extra help as early as possible.
Technology in the Classroom
When using technology, please be respectful of your classmates and the active and participatory nature of the class. Laptops and tablets are permitted for note-taking only. The use of these devices for email, Facebook, Twitter, Instagram, or any other purpose is prohibited while class is in session.

Please turn off or silence all cell phones during class. If you are using your phone during class time, I reserve the right to ask you to leave class, and you will get a 0 for attendance and any assignments that day. If you need to take a call, send a text, or check your email during class time, please leave the classroom or wait until break to do so.

Please do not record the lecture or class discussion without permission of the professor.

I start class with a PowerPoint lecture. I will post the PowerPoint presentations on Blackboard, sometimes in a slightly modified format, at 10 am the day after class. PowerPoint slides will not be posted prior to class because they contain answers to practice problems. The slides only serve as a guide for the lecture—they are not sufficient for mastering the concepts. In order to earn a high grade in this class, you will need to learn the material by carefully reading the texts, actively participating in class, and thoughtfully completing the assignments.

Email Policy
While I read my email almost every day, I do not check it constantly. Therefore, please allow one business day for me to respond to your emails. If you email me an assignment, I will always send you a short confirmation email. Do not consider the assignment submitted until you receive that confirmation.

I do not give out grades over email. If you want a grade on a particular assignment or a mid-semester evaluation, please check your grades on Blackboard or see me during my office hours.

If I need to contact you, I will do so via Blackboard and your CSU email. Please make sure you check that account frequently for any updates.

University Policies
Cancellation of Class Due to Weather
Class will not be cancelled due to weather unless the university is closed. Check the CSU website for the most up-to-date information.

Safety Escort
The CSU Policy Department offers a free escort service for students, faculty, and staff to and from their cars. To request an escort, call 216.687.2020. For more information, visit http://www.csuohio.edu/welcome/safety-services.

Students with Special Needs
It is the policy of Cleveland State University that “Educational access is the provision of classroom accommodations, auxiliary aids and services to ensure equal educational opportunity for all students regardless of their disability.” Any student who feels they 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 CSU counseling center provides academic counseling for students. They run workshops throughout the semester to assist you in maximizing your note taking skills, test taking skills, assisting with text anxiety reduction, and time management. Information on these services, as well as a schedule, can be found at: http://www.csuohio.edu/counselingcenter/academic-skills-development-workshops-0.

The tutoring center also offers workshops on improving academic success as well as tutoring for some specific course content. Information on the tutoring center can be found at: http://www.csuohio.edu/tutoring/tutoring.

**Academic Conduct**
Please note that students are subject to all CSU student policies and academic regulations, including (but not limited to) The Code of Student Conduct and the Policy on Academic Misconduct, which can be found online at: http://www.csuohio.edu/compliance/student-code-conduct.

Except when permitted for group projects and the comprehensive problem set, students may not work together on assignments, although discussion of course topics and readings is always encouraged.

Your Code of Student Conduct states that: “Major infractions comprise those instances of cheating, plagiarism, and/or tampering which affect the overall course grade, such as a major/comprehensive exam, term paper or project, final grade evaluation, or academic standing and status.” Although at times graded separately, the assignments in this course are interrelated. A breach of academic integrity in one assignment may infect the entire course, and be considered a major infraction, which will lead to a failing grade. It also can lead to additional punishments by the university, up to and including expulsion with a permanent notation on your transcript.

The CSU Student Handbook defines plagiarism as: “Stealing and/or using the ideas or writings of another in a paper or report and claiming them as your own. This includes but is not limited to the use, by paraphrase or direct quotation, of the work of another person without full and clear acknowledgment.” When in doubt, ask the professor, writing center, or librarian for clarification.