MAT 311: Introductory Probability and Statistics

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Major Objective of the Course

This course will focus on developing a deep understanding of the theory and concepts underlying inferential statistics. Topics include the collection, presentation and analysis of data, understanding variability in data, using fundamental probability concepts to make inferences about populations based on sample data, and determining confidence intervals and conducting tests of significance on data from one and two samples. These objectives will be accomplished through a multi-pronged approach to instruction that features active engagement with real data sets that involve you in writing responses in the textbook, summary lectures to clarify and emphasize the “big ideas” of each lesson, and your own efforts outside of class to bring meaning to the content.

Intellectual Foundations Outcomes

This course fulfills the Intellectual Foundations Mathematics and Quantitative Reasoning requirement and will meet the following outcomes. Students will:

a. describe and analyze sets of numerical data visually and quantitatively.
b. draw valid and meaningful inferences and conclusions from data using appropriate methods.
c. assess the validity of conclusions drawn from statistical methods.

Materials


Graphing calculator: A TI-84 or TI-83 is required. Please bring one for every class.

Grading Policy:

Final grades will be calculated based upon the following activities. More detailed descriptions are below.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Quizzes</td>
<td>15%</td>
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<tr>
<td>Exams (2 @ 15%)</td>
<td>30%</td>
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<tr>
<td>Final Exam</td>
<td>20%</td>
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<tr>
<td>Homework/Classwork</td>
<td>25%</td>
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<tr>
<td>Class Participation/Group Process</td>
<td>10%</td>
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Quizzes: Quizzes will be unannounced, short, and relate to the material covered in the previous one or two classes. Often class will begin with a quiz. If you are late you may not make up the quiz. The quizzes may be partnered at times.
**Exams:** There will be two examinations and a cumulative final exam. The dates for all exams will be announced in class and posted on the course website. The final exam will be announced once the CEP schedule is finalized but will take place during the week of 5/10 – 5/13.

**NOTE:** A minimum of a two-hour notification of an absence from an exam is required. This notification can be by e-mail or telephone to the above number or the department office at 878-5621. In addition, written documentation of the problem is required if a make-up is to be allowed. A physician’s note must be presented in the event of illness. In the event of a death in the family a copy of the obituary is required. Failure to adhere to these procedures will result in a grade of zero on the exam.

**Homework/Classwork:** Assignments will be an integral part of your learning experience in this course. Assignments will be posted on the course homepage at math.buffalostate.edu/~wilsondc. Questions will not be answered during the class that the assignment is due. Reading the text is an ongoing expectation and will facilitate completion of the assignments. The assignments are substantial and you are encouraged to begin working on them as soon as they are assigned. You are also encouraged to work with your classmates on the assigned problems. However, you should each complete your own personal write-up. (see NOTE under Academic Integrity) For most problems, you will have to show and explain your work. In addition, you will frequently work in class on the material and you will have tasks provided to be completed individually or in groups that may be collected and assessed. You (or your group) may be asked to present to the class occasionally.

**Late Submissions:** Unless otherwise stated, assignments are to be submitted at the start of class the date they are due. If you have a problem submitting an assignment on time, discuss it with me as soon as possible. Any work that is not completed on time will suffer a reduction in grade that will vary according to the degree of tardiness. I will not be able to accept an assignment more than 2 days late. In the event of a class absence, assignments should be e-mailed or placed in my mailbox on the due date to avoid a reduction in grade.

**Homework Rubric:**
4: Solutions include a complete response with clear explanation (complete sentences) along with diagrams and supporting work where appropriate including graphs with appropriate scale indicated. Solution shows understanding of the question’s statistical purpose and ideas and includes response to all elements of the question.

3: Solutions are good solid responses but explanation is less complete. Supporting work may lack some of the above elements or elements of the question may have been omitted and/or misunderstood. Conclusions may not be fully supported.

2: Submission contains incomplete responses, unclear explanations, and or omitted portions. Lacks diagrams or includes diagrams that are unclear or inappropriate. Indicates some understanding of statistical ideas though not expressed clearly. Discussion incomplete.

1: Omits significant parts of the questions and/or has major errors. Used inappropriate strategies or failed to document solution paths with diagrams, work, and/or supporting discussion.

0: No submission or submission is of such low quality that no credit may be awarded.
**Attendance:**  
You are expected to attend every class. Your active involvement individually, in small groups, and with the entire class is an important way to help meet the course objectives. For you to be involved you must be present. Less than perfect attendance will affect your participation grade as described below. In the event of an absence you should contact a classmate to discuss the material covered and assignments prior to contacting the professor for assistance.

**Group Process**  
The following rubric will be used to assess your active engagement in the group process and efforts at promoting an effective learning environment for all.

<table>
<thead>
<tr>
<th>Individual Assessment of Cooperative Learning indicators</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
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<tbody>
<tr>
<td>Works Toward Group Goals</td>
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<tr>
<td>Uses Effective Interpersonal Skills</td>
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<tr>
<td>Contributes to Group Maintenance</td>
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<tr>
<td>Takes on a Variety of Roles</td>
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**Indicator descriptions**

Works Toward Group Goals:
4: Actively helps identify group goals and works hard to meet them  
3: Communicates commitment to group goals and effectively carries out work to meet them  
2: Communicates a lack of commitment to the group goals  
1: Does not work toward group goals or actively works against them

Uses Effective Interpersonal Skills:
4: Actively promotes effective group interactions and the expression of ideas and opinions in a way that is sensitive to the feelings and knowledge base of others  
3: Participates in group interaction without prompting. Expresses ideas and opinions in a way that is sensitive to the feelings and knowledge base of others.  
2: Participates in group interaction with prompting or expresses idea and opinions without considering the feelings and knowledge base of others.  
1: Does not participate in group interaction even with prompting or expresses ideas and opinions in a way that is insensitive to the feelings or knowledge base of others.

Contributes to Group Maintenance:
4: Actively helps the group identify changes or modifications necessary in the group process and works toward carrying out those changes.
3: Helps identify changes or modifications necessary in the group process and works toward carrying out those changes.
2: When prompted, helps identify changes or modifications necessary in the group process or is minimally involved in carrying out those changes.
1: Does not attempt to identify changes or modifications necessary in the group process even when prompted or refuses to work toward carrying out those changes

Takes on a Variety of Roles:
4: Effectively performs multiple roles within the group
3: Effectively performs one role within the group
2: Makes an attempt to perform one role but has little success
1: Rejects opportunities to perform one role

**Academic Integrity:**

The university has a responsibility to promote academic honesty and integrity and to develop procedures to deal effectively with instances of academic dishonesty. Students are responsible for the honest completion and representation of their work, for the appropriate citation of sources, and for respect for others’ academic endeavors.** By placing their name on academic work, students certify the originality of all work not otherwise identified by appropriate acknowledgments.

No credit shall be awarded in situations where it has been determined that this policy has not been followed.** Adapted from the University of Wisconsin’s Student Disciplinary Guidelines.

NOTE: I use a *0 to indicate a grade of zero that reflects what I see as plagiarized work. You may challenge this grade by making an appointment with me and discussing the solution(s) and process by which you arrived at it.

**Statement on Students with Disabilities:**

If you have a diagnosed physical disability, learning disability, or psychological disability which will make it difficult for you to carry out the course work outlined above or which requires accommodations such as assistance from note takers and/or readers, extended time on assignments, and so on, please advise me during the first week of the course and contact the Office of Special Services for Students with Disabilities (878-4500) to discuss possible arrangements for reasonable accommodations.

**Classroom Etiquette:**

Please turn off all cell phones and put them out of sight and reach and contact with your body so as not to interrupt your engagement in the lesson. See me at the start of class to inform me of any emergency situation that requires otherwise. Similarly, you are expected to arrive on time for every class.

**Important Dates (see exam dates above):**

- February 16: no class - Presidents’ Day recess
- March 30 & April 1: no class - Spring Break
- April 7: Last day for course withdrawals
- May 10 – May 13: CEP, Final Exam date/time TBA