Introduction to Probability and Statistics

MA171 04, 05, and 06 Fall 2015

Professor: Dr. Olga Herman
Office: JXJ 2215
Email: openlet@nmu.edu
Potential Office Hours*: M,W,R,F 9:00-11:00 am, 1:00 - 2:00 pm, T 11:00-2:00
   *appointments must be made via e-mail in advance; other hours are available

Text: Moore, McCabe, Craig. Exploring the Practice of Statistics. Loose-leaf version available packaged with code for access to on-line system. To purchase electronic version go to: http://courses.bfwpub.com/eps . Electronic access to this website IS REQUIRED. Access code can be purchased separately. See Paul Wright at NMU Bookstore for detail. Text and access code must be purchased and online access obtained by Sept. 15, 2015.

Course description: Statistics is the language of numbers. In this class you will learn how to interpret numerical data and make inferences for answering research questions. The laws of probability are what make this possible. Methods for the analysis and interpretation of research data will be presented in a logical, practical sequence of steps that will lead to conclusions based on research data. Statistics is used in all fields in some form or another - even in our day-to-day living. An understanding of basic statistical concepts is essential for making judgments and predictions. Even the reading of the daily newspaper involves a degree of understanding of these basic statistical concepts in order to form rational and logical opinions. Emphasis in this class is on application of these methods with supporting theoretical concepts presented as needed.

Learning Objectives: Upon completion of this course, students will be able to:
   - understand the difference between descriptive statistics and inferential statistics
   - determine sample spaces and find the probability of an event
   - summarize a set of data numerically and graphically
   - formulate and test hypotheses about parameters for both one and two populations for both population means and proportions
   - construct and interpret confidence interval estimates for population parameters
Evaluation of these learning outcomes will be done through homework assignments, quizzes and exams.

Course Requirements:

Students will complete five online exams. An online practice test will be available for each quiz prior to testing and reviewed in class. Homework will be assigned intermittently and may or may not be collected or reviewed. The text book code allowing online access to the course material and tests via the text book’s stats portal is required.
Grades:

Homework: 10%
Five interim Tests: 60%
Final Exam: 30%

Scale:

A ≥ 94%  A- 90% - 93%  B+ 87% - 89%  B 84% - 86%  B- 80% - 83%
C+ 77% - 79%  C 74% - 76%  C- 70% - 73%  D+ 67% - 69%  D 74% - 76%
D- 60% - 63%  F < 60%

Extra credit may be available for having successfully completed practice tests prior to each test.

Schedule:

Expect to spend an average of 15 hours of study per chapter. A few things to consider –

- Some chapters are easier than others and will take less time. Expect to spend more than 15 hours on some of the harder chapters.
- This course starts out slow and picks up rapidly. The easier chapters and tests are the earlier ones so do not become complacent if you score well in the beginning. The practice tests are designed to identify the areas of concern. Use these wisely and make an appointment for private consultation before the test if you need extra assistance with a particular area. There is a math help lab available in West 2810 open daily from 8-5 for drop-in help. These are conducted by students who have usually had this class and can offer assistance.

Attendance: Attendance in lecture classes is not mandatory. Attendance will be taken sporadically primarily so I can get to know you individually. You are, however, responsible for any material or announcements (i.e. test dates, assignment due dates, etc.) made in class. Except for test days, no absentee excuses are necessary.

Students may attend any other MA171 sections which I teach at any time without prior notice. If seating is limited, priority will be given to those students registered for that section. This policy also applies to exams, i.e. you may elect to take exams in any other sections at their scheduled test times. All lectures and exams will be identical for the three sections of MA171 which I teach. Lecture dates/rooms/and times are as follows:

MA171-04 CRN 80451 M,W,R,F 12:00-12:50 JXJ 3313
MA171-03 CRN 80795 M,W,R,F 3:00-3:50 JXJ 3313
MA171-05 CRN 80452 M,W,R,F 11:00-11:50 JXJ 3313
**Homework policy:** Homework will be evaluated as attempted (1) or not (0) and will be used in assessing the final grade by no more than 10%. This generally serves as a factor in determining borderline grades. If you feel you may need the homework to help your grade you should try to submit all collected assignments. There will be an opportunity before each class period to ask questions about the homework or lecture material. Late homework is always accepted at any time during the semester.

**Exam policy and practice tests:** Five tests will be given during the semesters. A tentative time-line is attached to this syllabus with potential test dates. These dates are not definite and are subject to change depending upon the pace and amount of material covered throughout the semester. **Tests will always be announced in class at least two days** prior to the test date and a practice test and review will always be done prior to testing. Remember, although attendance is not mandatory YOU are responsible for any announcements made in class, especially tests and a strict make-up policy which follows will be enforced! Successful completion of the practice tests prior to the actual test may result in extra credit added to the test grade so take advantage of this opportunity and do the practice tests. There will be no limit to the number of times you may take the practice test and answers will be provided.

**Make-up exam policy:** Exams can be taken during any of the MA171 sections listed above during their assigned test periods. Seating priority will be given to those enrolled in that particular section.

Make-up exams will only be allowed with permission of the instructor for valid health issues or approved extenuating circumstances. If permission is granted, the exams MUST be made-up within ONE-WEEK of the original test date. Re-takes of exams will not be given except in extenuating situations with permission from instructor. Since all exams will have practice exams with them, if you treat your practice exam as “the real thing”, your actual exam will serve as a “retake” and greatly assist you in making a good grade!

**Communication:** Communication will be via NMU email only. My address: opendlet@nmu.edu. All emails will be answered within 48 hrs. Grades will be communicated via educat. No other forms of electronic communication (i.e. educat email or stats portal messages) will be acknowledged. If the communication is important, be sure to wait for acknowledgement that it has been received by me before assuming I have received it.

**Office appointments:** I welcome interaction with students outside of class hours so please take advantage of it. I truly would like to get to know each of my students individually and help you learn the material. However, if it is important to see me outside of class hours make an appointment via e-mail. You initiate the requested time and date and wait for my acknowledgment that I can see you at that time. **Do NOT rely on my being in my office during the above proposed office hours.** Other commitments arise during the course of the semester which may preclude my availability at those times. However, if I acknowledge an appointment, I will be sure to be there at that time and give you undivided attention.
Disability Services:

If you have a need for disability-related accommodations or services, please inform the Coordinator of Disability Services in the Dean of Students Office at 2001 C. B. Hedgcock Building (227-1700 or disserv@nmu.edu). Reasonable and effective accommodations and services will be provided to students if requests are made in a timely manner, with appropriate documentation, in accordance with federal, state, and University guidelines.

Formal Communications Studies Requirement:

This course satisfies the Formal Communication Studies requirement.

This course is designed to introduce students to the ways in which information and ideas are expressed using a communication system other than English. Such courses should foster the student's ability to conceptualize and communicate in an orderly, rational manner. Characteristics of a communication system include: 1) possession of a grammar; 2) operation from an established set of rules; 3) reasoning properties such as deduction, inference drawing and problem solving. This includes courses in languages and those in which the central focus of the course is on statistics, computers or formal logic.

This syllabus is subject to change with notice.

**Tentative** Timeline for MA171 Fall 2015

<table>
<thead>
<tr>
<th>Date (week of)</th>
<th>Chapter</th>
<th>Topic</th>
<th>Assignment</th>
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<tbody>
<tr>
<td>8/24</td>
<td>1-3.1</td>
<td>Terms, graphs, descriptive statistics</td>
<td>HW 1</td>
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<tr>
<td>8/31</td>
<td>1-3.1</td>
<td>Terminology and descriptive statistics</td>
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<tr>
<td>9/7</td>
<td>3.2</td>
<td>Normal probability density</td>
<td>HW 2</td>
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<tr>
<td>9/14</td>
<td>3.3</td>
<td>Normal probability density</td>
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<tr>
<td>9/21</td>
<td>3.4</td>
<td>Normal Probability density</td>
<td>HW 3</td>
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<tr>
<td>9/28</td>
<td>4.1-4.4</td>
<td>Regression and correlation</td>
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<td>10/5</td>
<td>5</td>
<td>Probability</td>
<td>HW 4</td>
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<tr>
<td>10/12</td>
<td>7.1</td>
<td>One sample mean inference</td>
<td>HW 5</td>
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<tr>
<td>10/19</td>
<td>8.1</td>
<td>One sample confidence intervals</td>
<td>HW 6</td>
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<tr>
<td>10/26</td>
<td>6.1</td>
<td>One sample proportions</td>
<td>HW 7</td>
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<td>11/2</td>
<td>6.2</td>
<td>Two sample proportions</td>
<td>HW 8</td>
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<tr>
<td>11/9</td>
<td>7.2</td>
<td>Two-sample means</td>
<td>HW 9</td>
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<td>11/16</td>
<td>4.5</td>
<td>Analysis of two-way tables</td>
<td>HW 10</td>
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<td>11/23</td>
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<td>Thanksgiving break</td>
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<tr>
<td>11/31</td>
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<td>Review, Practice final</td>
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| Final exam optional days/times | All MA171 sections may take the final exam during any one of these days/times | Mon 12/7 10:00-11:50 am  
Mon 12/7 2:00-3:50 pm  
Tues 12/8 12:00-1:50 pm  
Wed 12/9 2-3:50 pm | |