MA-171 Course Description (W,03)

**Probability and Statistics**: Meets MTWThF from 12 noon to 1 p.m. in WEST-2911

**Instructor**: Bob Myers New Science Facility (NSF) 1135 Office hours posted on door and web site
Office Phone: 227-1610 Home Phone: 249-1137 Email address: rmyers@nmu.edu

**Web Site**: My web site address is http://euclid.nmu.edu/~rmyers/. You will find there a link to the web site for this course.

**Text**: General Statistics, 4th Edition, Chase & Bown. There will also be a set of LECTURE NOTES which I'll provide. These notes will be used each day in class.

**Prerequisite**: MA-103 or equivalent, passed with C- or better

**Course Content**: This course is divided into three **Sections**:

**Section I**: Prerequisite Material

Topics 1. Descriptive Statistics (Chs 1 & 2)
2. Probability (Sects 4.1–4.5)
3. Discrete Probability Distributions (Sects 5.1–5.5)
4. Continuous Distributions (Sects 6.1–6.5)
5. Normal Approx to Binomial Distribution (6.6), Central Limit Theorem (Sect 6.7)

**Section II**: Hypothesis Testing and Confidence Intervals

Topics 6. Theory. Mean for one population. (Sects 7.1–7.3)
7. One population mean w/ small samples. Proportions. P-Values. (Sects 7.4–7.6)
8. Two pops: Means, proportions. (Sects 8.1,2,4,5,6)

**Section III**: Additional Applications of Statistics

Topics 9. Regression and Correlation. (Sects 3.1–3.4; 9.1,2,4,5,6)
10. Analysis of Variance (ANOVA). (Sects 10.1,2,3)
11. Categorical (Count) Data. (Sects 11.1–11.4)

**Graded Materials**: To evaluate your understanding of statistics, there will be three Section Exams, one at the end of each Section; five graded Hour Exams on material in Sections 2 and 3; and a comprehensive Final Exam. To help you assess your progress along the way, and to help me with my teaching, there will be eight "Mutual Assessment eXercises" (MAX's), one at the end of each Topic in Section 1, and at the end of Topic 11.

--Section Exams: Multiple choice tests (with some written questions) over a number of topics. These exams take two hours so will be given from 11 to 1 or 12 to 2. (If these times will not work for any of you, please tell me and special arrangements will be made. Also, I'll tell you where the test will be held a day or two before the test.)

--Hour Exams: Written exams covering a single topic. They will take one hour and will be given during the regular class period. They are like the "Self Tests" in the LECTURE NOTES, and like the MAX's.

--Final Exam: Comprehensive exam over the entire course. It's the same kind of test as the Section Exams. The final is untimed but should take about two hours.

--MAX's: One hour long on material covered in a Topic. No books or notes. Formulas will be given on the test paper. The MAX's are optional. Your MAX will be corrected and returned on the following day. Problems are like those in the text and on sample tests in the LECTURE NOTES. The purposes of the MAX's are (1) to allow you to assess how well you understand the material and to rectify areas of misunderstanding, and (2) to

allow me to see areas that you are having difficulty with so that I can reemphasize these topics as the course proceeds.

**Academic Expectations**: I expect the average student to do about one to two hours of outside preparation for each hour of class time. Experience has shown that it is beneficial to form study groups to discuss the material and work on problems together. The **Math Lab** (WEST-3810) is a special room that has been set aside as a mathematics study room. There will be a tutor there to answer questions. (My office is nearby so you can ask me questions as well.) Also, I will help you with problems and answer questions after class and during my office hours. You may also email or telephone me. You should do all (or most) of the assigned problems though these will not be collected. Brief answers to odd-numbered problems are in the back of the text. I will post more detailed solutions to some of the problems on the web site.

**Grades**: The lower cutoffs for A-'s, B-'s, etc. will be 90%, 80%, etc. Your **Evaluation Score** will be based on your scores on the evaluation exercises: the three Section Exams, the five hour exams (which, together, will count as three Section Exams), and the Final Exam (which will count as two Section Exams). Each MAX will be graded but your MAX scores will not be used to compute your final grade unless they will improve your grade. The way this will work is as follows: if the average of your five best MAX scores is higher than your Evaluation Score, then this average will count as three Section Exams. Otherwise, your final grade will just be based on your Evaluation Score. Proviso: You must take at least five of the MAX's and you must satisfy the attendance requirements described below. Otherwise your final grade will be based solely on your Evaluation Score.

**Attendance**: Attendance is required in this course. At most five unexcused cuts are permitted. You must take all exams (Section Exams, Hour Exams, Final, MAX's) at their scheduled times. No makeup exams will be given except in cases of utmost gravity. In such a case, you must notify me before the exam that you will be missing.

**Calculators**: A calculator is required for this course. I recommend a Sharp EL-509RH calculator but any calculator (like a TI-85) will do if it has statistical functions for two or more variables (at least mean, standard deviation and regression and correlation.) If you need help with your calculator, bring it and the instruction manual to my office or to the Math Lab.

The statistical program, Minitab, that the University has provided and that you will have installed on your laptop, could be used instead of a calculator. However, the laptop is much more cumbersome to use than is a hand held statistical calculator. If you don't have a calculator, you will have to bring your laptop to class each day and have Minitab ready to use during the class period. Minitab will be used in Unit 10 and possibly in Units 7, 8 and 9.

Schedule: A tentative schedule is given below.

| Topic | Test Date | Topic | Test Date |
|---|---|---|---|
| 1 | MAX, Fri, 1/17 | | |
| 2 | MAX, Tue, 1/28 | 9 | HrExam, Tue, 4/8 |
| 3 | MAX, Wed, 2/5 | 10 | HrExam, Tue, 4/15 |
| 4 | MAX, Tue, 2/11 | 11 | MAX, Tue, 4/22 |
| 5 | MAX, Tue, 2/18 | Section Exam 3 | Thurs, 4/24 |
| Section Exam 1 | Thurs, 2/30 | | |
| 6 | HrExam, Fri, 2/28* | | |
| 7 | HrExam, Tue, 3/18 | Final Exam | Mon, 4/28 |
| 8 | HrExam, Tue, 3/25 | | |

Section Exam 2 Thurs, 3/27

---

* Note that this is the Friday before spring break. Please do not make plans that would require you to ask me to take this exam early.

**Index Card**: Please put the requested information on the front of the index card.

1) Name & Email Address) 2) Year in school
3) Major 4) Minor
5) Previous college math courses and grades
6) High school math courses and approximate grades
7) Are you repeating this course? If so, when did you take it before and what was your grade?
8) When do you plan to graduate?
9) Why are you taking this course? 10) Career plans?

**Further Notes**: Bring your text, calculator, Lecture Notes, and notebook (for your class notes and homework solutions) to every class, starting Tuesday, the second class meeting. All tests, quizzes and homework are to be done in pencil.

If you have a need for disability-related accommodations or services, please inform the Coordinator of Disability Services in the Disability Services Office at 1104 University Center (227-1737). Reasonble 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.

Since 1989, I've taught eleven sections of MA-171. The distribution of grades for those classes is given below.

| | GRADES | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | F | W | Totals |
| | 5 | 10 | 10 | 2 | 0 | 1 | 28 |
| | 5 | 7 | 9 | 1 | 0 | 3 | 25 |
| | 5 | 8 | 4 | 1 | 4 | 4 | 26 |
| | 3 | 9 | 8 | 5 | 3 | 1 | 29 |
| | 2 | 16 | 7 | 0 | 0 | 4 | 29 |
| | 3 | 8 | 5 | 2 | 0 | 0 | 18 |
| | 6 | 12 | 11 | 1 | 0 | 0 | 30 |
| | 3 | 10 | 5 | 1 | 0 | 0 | 19 |
| | 2 | 5 | 5 | 3 | 0 | 5 | 20 |
| | 2 | 9 | 8 | 7 | 1 | 5 | 32 |
| | 7 | 6 | 12 | 1 | 2 | 6 | 34 |
| | 1 | 9 | 7 | 1 | 2 | 3 | 23 |
| | 4 | 7 | 4 | 1 | 2 | 10 | 28 |
| | 2 | 12 | 5 | 2 | 0 | 1 | 22 |
| | 1 | 4 | 9 | 2 | 1 | 5 | 22 |
| | 5 | 12 | 6 | 1 | 1 | 5 | 30 |
| Totals | 56 | 144 | 115 | 31 | 16 | 53 | 415 |