**Northern Michigan University**

**Department of Mathematics/Computer Science**

# Syllabus

## MA251 Probability and STATISTICS FOR THE ELEMENTARY TEACHER

## Winter 2004 Section 01

latest update: 27 December 2003

**URL for course info: http://Ellerbruch.nmu.edu/classes/Ma251W04/MA251.html**

3:00 - 3:50 pm M W R F Room West 3806

Prerequisite: C in MA 151 or equivalent

### Instructor Information:

Instructor: L. W. Ellerbruch
Office: NSF 1109
Telephone: 227-1597
Office Hours: As posted by office door but will include:

11:00 - 11:50 am M W Th F
1:00 - 1:50 pm M W Th F
Other hours by arrangement.

### Texts:

Exploring Data
Exploring Probability
The Art and Techniques of Simulation
Exploring Surveys and Information from Samples

**Basic Philosophy and content for the course:**
The course will be built around the rule of "four"; as much as possible, every topic should be presented concretely (geometrically/visually/hands-on), numerically, abstractly (algebraically) and have a strong emphasis on written communication. In-class work, homework, exams, quizzes, and projects will utilize all four components as much as is reasonably possible. Communication is important and individuals are encouraged to talk about mathematics education with other members of the class AND other students. Cheating is defined as turning in someone else's work as your own. It is not cheating to work with

others. Sharing the learning and teaching is an important part of the course.
Technology will be an important component of classroom instruction and learning. Students will use calculators and computers. E-mail, mail groups, and the internet will be used as much as possible.

**Calculators and Technology:**
All students will acquire and use a university e-mail account. Information will be sent to the students by e-mail. Students will be expected to communicate with each other and the instructor by e-mail. A complete and up-to-date syllabus, list of assigned exercises, list of assignments, and other information related directly to the class will be available on a WWW page on the instructor's WWW server.

**Calculator**

Some aspects of the visual (geometric/graphical/concrete) component of the course will be designed around the Texas Instruments TI-83 or TI-86 graphing capabilities, computer software, the WWW, or hands-on materials you will build and use. The numerical component of the course will be designed around the TI-83's or TI-86's computation and programming capabilities, or computer programs which allow for in-class demonstrations.
A minimum of a scientific calculator is suggested for the course. It will be useful for homework, in-class exercises, quizzes and exams. It must have the capability of logs, exponents, trig functions, and it should have memory. You will find it important that the calculator also have factorial, permutations and combinations keys. You are responsible for learning how to use your specific calculator, although we will discuss the most common types. The calculator should work with negative exponents. A graphing calculator such as the Texas Instruments TI-86 is an extremely good calculator to consider if you can afford it and especially if you will be taking additional math classes where it may be required. A TI-83 emulator is available for the laptop.

**Technology**

It is assumed students will use word processing and graphing programs on microcomputers to complete reports. Students will use e-mail, a WWW browser, mail groups, editors, and various software. Demonstration lessons will be provided.

**Assignments:**
In-class exercises and out-of-class exercises will be assigned on a regular basis. It is expected that students will complete all assigned exercises. Some homework sets may be collected. Some homework exercises may be marked. Some homework exercises may be used as quiz items.
Reading assignments will be made, and it is very important to complete them.
There will be in-class discussion and group work. Participation is required.
Assignments will be made which will require writing. Some reports will be submitted electronically.
There will be projects which will be completed by groups with only one report for the group, projects which require group problem solving with individual reports, and projects which are independent.
Students may be required to make their results/reports available on the World Wide Web.
You are responsible for the appropriate material in the text even if it is not covered during class time.
You will be tested on material from the class, from the text, and from other sources. You will be expected to form your own opinions which will be asked for on tests. Your opinion will be evaluated primarily on the justification or basis for the opinion even if the opinion is in agreement with the instructor's position.

Students will be responsible for instructional material placed on the WWW for them, or assigned to them.

**Attendance:**
Attendance is required. Your participation grade will be affected by attendance (an exception may be made for those earning an "A" if prior arrangements are made and for selected excused university activities). Major exams may be made up only if the absence is excused prior to the absence. Daily work or quizzes may not be made up!

**Grading:**
**Exams**
There will be four "hourly" exams. The fourth hourly exam will be given during the allocated final time. The quizes, tests, or final may be of a non-traditional or non-standard format which might even include a group component.

**Quizzes**
Quizes will usually be unannounced and will usually be of very short duration. There may be a quiz any day. Likely material for the quizes will include short answer or essay questions, homework problems, or material emphasized in class.

**Points**
Points are cumulative for all class activities. There will be about:

| points | category |
|---|---|
| 400 - 600 | tests |
| 50 - 200 | quizzes/exercises |
| 50 - 200 | projects (much writing) |
| 100 - 200 | class participation |

**Letter Grades**

Point equivalents for assignments receiving letter grades are as follows:

GRADE: % equivalent

| | |
|---|---|
| A+ | 98 |

The following is the guaranteed scale for **final** grades.

GRADE DISTRIBUTION
% score: GRADE

| | |
|---|---|
| 93 - | A |

| | |
|---|---|
| A | 95 |
| A- | 91 |
| B+ | 88 |
| B | 85 |
| B- | 81 |
| C+ | 78 |
| C | 75 |
| C- | 71 |
| D+ | 68 |
| D | 65 |
| D- | 61 |
| F+ | 40 |
| F | 30 |
| F- | 20 |

| | |
|---|---|
| 90 - 92.99 | A- |
| 87 - 89.99 | B+ |
| 83 - 86.99 | B |
| 80 - 82.99 | B- |
| 77 - 79.99 | C+ |
| 73 - 76.99 | C |
| 70 - 72.99 | C- |
| 67 - 69.99 | D+ |
| 63 - 66.99 | D |
| 60 - 62.99 | D- |
| 0 - 59.99 | F |

However, the instructor reserves the right to adjust the curve downward slightly to allow for better breaks between letter grades. He also reserves the right to discard one or more quiz grades for every student from the percent calculation, but this is not a guarantee. There may be some opportunity for bonus points.

**Final**

The final exam time will be used for the fourth hourly exam and all students will be required to take it. The final time will be the scheduled time (from 2:00 to 3:50 pm Tuesday 27 April 2004 unless there is a change or correction in the university schedule) in NSF 1209.

**NOTES:**

All material in the course is cumulative and once covered in class, or assigned, may be used on any test or quiz.

**DISABILITY STATEMENT:**

If you have a need for disability-related accommodations or services, please inform your professor or the Office of Student Support and Disability Services at 1104 University Center (phone: 227-1737) 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.