**Northern Michigan University**

**Department of Mathematics/Computer Science**

# Syllabus

## CS255 COMPUTERS IN ELEMENTARY EDUCATION

## Fall 2004 Section 01

latest update: 30 August 2004

**URL for course info: http://Ellerbruch.nmu.edu/classes/cs255f04/CS255.html**

Seq #: 80641 section 01
12:00 noon - 12:50 pm M W R F Room NSF 1209
Prerequisite: C in MA 150 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
2:00 - 2:50 pm M W Th F
Other hours by arrangement.

### Text:

No Text is required

**Liberal Studies**

This course satisfies the Division V liberal studies requirement.

These courses are 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 studentÕs 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 will be accomplished in this class by students writing using HTML and other methods of communication using technology and the internet.

**Basic Philosophy and content for the course:**
The course will be built around the rule of "four"; every topic should be presented visually, numerically, abstractly (algebraically) and have a strong emphasis on written communication. In-class work, homework, exams and quizzes, and projects will utilize all four components as much as is reasonably possible. Communication is important and individuals are encouraged to talk about computers and assignments with other members of the class. 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 computers. E-mail, mail groups, and the internet will be used extensively.

This course NOT computer programming. There is NO PROGRAMMING EXPERIENCE REQUIRED. If you have considerable programming experience, you may be in the wrong course, check with the instructor.

## Time Commitment

Computers inevitably involve a great deal of problem solving. The combination of problem solving, learning new languages, and developing new skills often takes a great deal of time. The rewards are commensurate with time and effort. The normal expectation for a course of this nature is that the student will spend a minimum of ten hours a week outside of class and some students will spend substantially more time. Students frequently report averaging fifteen or more hours a week outside of class.

## 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 syllabus and up-to-date 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

It is probably wise to bring a calculator to class or use the TI-83 emulator which is installed on the laptops. All homework, in-class instruction, quizzes, and exams will assume the student has and can use a calculator. Test questions may involve numerical situations which would be difficult if not impossible to complete manually. The student is responsible for making the connection to the material, mathematical ideas, techniques, and technology being used in class.

The laptop may not be allowed to be opened during some quiz/exam situations.

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-85 is an extremely good calculator to consider if you can afford it and especially if you will be taking additional math classes where it will be required. A TI-83 emulator is available for the laptop.

## Laptop and Technology

The laptop is only to be used appropriately in the class.

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

## 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 expected.

Assignments will be made which will require writing. Reports will be submitted electronically. There may 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 will be required to make their results/reports/projects available on the World Wide Web.

You are responsible for any material assigned, even if it is not covered during class time. You will be tested on material from the class, from assignments 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 agrees with the instructor's position.

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

## Quality

Students are expected to produce quality products. If a student meets the stated requirements for an assignment, but does it in a minimal fashion, the maximum grade for the product will be a "C". To earn a "B" or an "A" there must be reasonable quality in the work.

## Collaboration

It is expected and students are encouraged to work together in order to assist each others understanding. But, assignments turned in must be substantially produced and understood by the individual seeking credit. If there is any question about the production, performance, or understanding of a product, the instructor reserves the right to question an individual regarding the details of the product. Inability to explain the product or lack of understanding of the product will be considered evidence for no credit on the assignment. Direct evidence of turning in another individual's work as your own (plagiarism or theft) will result in an 'F' in the course.

## Attendance

Attendance is required. Major exams may be made up only if the absence is excused prior to the absence.

## Grading:

## Exams

There will be exams and quizzes worth 250 - 350 points. There will be a comprehensive final which will be mandatory for all students with less than a "B" average. The final **may** be optional for those with a "B" or better. The quizes, tests, and final may be of a non-standard format which might include a group component or an on computer component.

## Quizzes

Quizzes 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 |
|---|---|
| 450 - 550 | Exams: tests, quizzes, final |
| 800 - 900 | projects/programs |

There will be a five percent penalty per calendar day off the top of a program for each day it is late before the assignment is returned and a ten percent penalty per calendar day off the top of

the program for each day it is late after the assignment has been returned/marked.

There may be some opportunity for bonus points, but they will only apply to the portion of the grade they are earned in and the maximum final score in an area is 100%. That is, bonus points earned in assignments cannot improve test scores.

## Letter Grades

Point equivalents for assignments receiving letter grades are as follows:

GRADE: % equivalent

| | |
|---|---|
| A+ | 99 |
| A | 95 |
| A- | 92 |
| B+ | 88 |
| B | 85 |
| B- | 82 |
| C+ | 77 |
| C | 70 |
| C- | 63 |
| D+ | 58 |
| D | 54 |
| D- | 52 |
| | |

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

GRADE DISTRIBUTION
% score: GRADE

| | |
|---|---|
| 93 - | A |
| 90 - 92.99 | A- |
| 87 - 89.99 | B+ |
| 83 - 86.99 | B |
| 80 - 82.99 | B- |
| 75 - 79.99 | C+ |
| 65 - 74.99 | C |
| 60 - 64.99 | C- |
| 57 - 59.99 | D+ |
| 53 - 56.99 | D |
| 50 - 52.99 | D- |
| 0 - 49.99 | F |

| | |
|---|---|
| F+ | 40 |
| F | 30 |
| F- | 20 |

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

There will be a final exam and all students with an average of less than "B" will be required to take it. The final **may** be optional for those with a "B" or better average. The final time will be the scheduled time (from 12:00 to 1:50 pm Thursday 16 Dec 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 the Coordinator of Disability Services in the Disability Services Office at 2001 C. B. Hedgcock (227-1700; TTY 227-1543). 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.

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