Course: Mathematics 566 – Technology for Secondary Teachers

Instructor: Dr. Douglas A. Lapp

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Office Phone: 774-5393

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Office Hours: M 10-11 a.m., W 1-2 p.m., and by appointment. I also maintain an Open Door policy. If my door is open, feel free to drop in. If my door is closed, I am probably hiding because I have some deadline to meet. (Please Feel Free To Call! I don't bite.)


Materials: A Voyage 200 or TI-92plus Graphing Calculator.

Texas Instruments TI-GraphLink cable and software

USB Flash Drive

We will be placing a bulk order for the Voyage 200 ($169 and comes with a GraphLink cable) graphing calculator. For the bulk order there is no shipping or tax charges. This is a greatly reduced price over the cost in retail stores. Make checks payable to Copco, Inc. Copco will also allow you to place your order with a credit card; however, the cost will be their web site price and you will need to pay shipping. The toll free number is 1-800-446-7021 or the web site is http://www.copcoinc.com.

Other Requirements: Membership in the National Council of Teachers of Mathematics (NCTM)

(For membership information, visit www.nctm.org and select the student membership option. This is a reduced price for dues and journals.)

Web Pages: http://calcnet.cst.cmich.edu/Faculty/lapp/ (Dr. Lapp’s page)

http://calcnet.cst.cmich.edu/Faculty/lapp/mth566/ (MTH 566 Page)

Course Description: This course is designed to help prospective secondary school teachers understand how technology can be used to develop mathematical concepts in children. The course will focus on internet applications and resources; dynamic geometry software; use of graphing calculators; use of computer algebra systems; use of data collection devices; use of word processing, spreadsheet, and databases; and use of presentation software. Admission is limited to students pursuing a B.S. in Ed., Secondary Emphasis.

This course will model pedagogical methods set forth by organizations such as the National Council of Teachers of Mathematics and the Mathematical Association of America.
Assessment: In order to allow for diversity in student learning styles and achievement measures, you will be assessed using several methods. Since one of our objectives is to be able to continually learn new technologies long after you leave “formal education”, we want you to be able to learn on your own. For this reason projects will constitute a large portion of your grade. In addition, you will have reading assignments, quizzes, a midterm exam, laboratory assignments conducted in cooperative groups, and a final project. Some of these assignments will require significant time outside of class.

Written Assignments: Written assignments will vary in nature. High standards for written work (grammar, spelling, style, and punctuation) will apply. All assignments must be word-processed on a computer with graphics electronically pasted into the document. You must learn how to use the computer to present your written work. A major part of the course grade will be for your assignments and group projects. These projects that make use of computer and graphing calculator technology will take the form of an extended, in-depth investigation of topics appropriate for the secondary mathematics classroom. More specific information will be given later.

Journal Readings: Some of the assignments will involve searching the current Mathematics Education journals for articles on using technology to teach secondary mathematics. The assignment will be to read journal articles on given topics. These articles will be on topics from the current mathematics education literature. The library has many fine journals specifically for mathematics education such as Mathematics Teaching in the Middle School, Mathematics Teacher, Journal for Research in Mathematics Education, School Science and Mathematics, and the NCTM Yearbooks. Many other journals are also acceptable. In addition, I may give you articles as handouts and then give you a quiz over the articles.

Quizzes: The quizzes will be over basic technological competencies. You will be expected to perform, on-demand, basic functions of the technology.

Midterm Exam: The midterm exam will test your ability to use various types of technology in an on-demand setting. You will be given mathematical investigations as well as pedagogical questions where you must analyze students’ mathematical work. The midterm will give an individual assessment of your ability to deal with technological use of in the learning and teaching of mathematics.

Laboratory Activities: Throughout the semester you will participate in lab activities and/or projects designed to give you experience with various types of technology. I think that you will not only find these labs helpful in generating ideas for your future teaching, but you will also find that concepts you were taught through memorization during your own school experience will begin to actually make sense. The use of technology in the mathematics classroom can foster an atmosphere of conjecture and proof. Students will be able to explore patterns that they could not before—this is one advantage of technology use.
You will also be expected to explore concepts using the computer and software such as Maple, Geometer’s Sketchpad (GSP), Cabri Geometry, Logger Pro, and Microsoft Office as well as hand-held technology such as the Voyage 200, TI-92plus, Lab Pro™, CBL2™, and CBR™. If you need to complete assignments on the computer, it is your responsibility to spend time outside of class in the computer lab in Pearce Hall. Since we will be using the computers, there may be times that our class will meet in the lab or we will use the laptop lab.

Final Project: There will be no final exam. The Final Project grade will take the place of the final exam. Class will meet during the scheduled final exam time.

Evaluation:

- Reports/Quizzes on Readings = 10%
- Quizzes = 10%
- Midterm Exam = 20%
- Assignments & Labs = 40%
- Final Project = 20%

Your grade will then be figured on the following percent scale based on the breakdown given above. I reserve the right to adjust grades; however, I will never adjust you down. Your grade will always be at least based on the scale given below. You will be able to check your grades online from the Math 566 webpage. On the first day of class I will ask you for a four-digit password that will allow you access.

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<tr>
<th>Scores</th>
<th>Grade</th>
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<tbody>
<tr>
<td>[92, 100]</td>
<td>A</td>
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<tr>
<td>[90, 92)</td>
<td>A-</td>
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<td>[88, 90)</td>
<td>B+</td>
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<td>[78, 80)</td>
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<td>[72, 78)</td>
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<td>[70, 72)</td>
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<td>D</td>
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Class Attendance: Class attendance is required. Attendance will be taken each class period. More than 1 unexcused absence will cause your grade to be lowered a third of a letter grade for each occurrence (e.g. 2 missed classes would change a B to a B-, 3 missed classes would change a B to a C+).

CMU provides students with disabilities reasonable accommodations to participate in educational programs, activities, or services. Students with disabilities requiring accommodations to participate in class activities or meet course requirements should first register with the office of Student Disability Services (250 Foust Hall, telephone #989-774-3018, TDD #2568), and then contact me as soon as possible.