EMAT 4700/6700
Advanced Explorations with Technology in Mathematics Instruction
May 2013

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Class Time: Monday-Friday: 12:30 – 3:15 PM
Room: 111 Aderhold Hall

Office Hours

Office hours are by appointment only. If you have a question or concern about the course or an assignment, please do not hesitate to contact us via email. By contacting us for an appointment, we can coordinate a meeting time that works with our schedules and yours.

Course Overview

The purpose of this class is to appropriately select and use technology in mathematics instruction, with an emphasis on the organization and design of materials for secondary mathematics courses.

Objectives

- To use application software and technological tools to solve mathematical problems, engage in mathematical investigations, create mathematical demonstrations, and construct new ideas of mathematics for yourself.
- To analyze the affordances of software applications and its connections to the mathematics and how to take this into account when planning activities and lessons.
- To design mathematical activities and lessons that capitalize on the affordances of technology.
- To communicate mathematical ideas that arise from computer investigations using word processing and web technologies.
- To communicate mathematical ideas via the computer applications.
- To become familiar with recent issues in the literature regarding the use of technology in mathematics education.

Text

There is not an official text for the course. Course readings will be posted in eLC.

Additional Resources

- You should have access to the NCTM *Principles and Standards for School Mathematics* and the *CCGPS*.
- You should be prepared to use Internet and library resources on a regular basis.
- Additional readings will also be required.
- Lynda.com is an online library of courses taught by recognized industry experts and is a part of UGA's online training program. Go to: http://eits.uga.edu/learning_and_training/lynda

Attendance and Professionalism

Attendance and participation are essential in this class, both for you to learn and so that others may benefit from your input. Attendance is expected because most of class time will be spent on group discussions and activities. Two points will be deducted from your point total for every absence and one point will be deducted for every tardy or time you leave early. The ideas and concepts presented cannot easily be transmitted through class notes. You are responsible for all announcements made in class even if you are not there. If extenuating circumstances arise and you are unable to attend class, please contact one of the instructors in advance or as soon as possible.

You are also expected to demonstrate professional behavior consistent with that of an educator. Professionalism includes, but is not limited to, arriving on time to class, arriving prepared for class, participation and engagement in classroom discussions, responding appropriately to constructive feedback in the classroom, and presenting a professional demeanor (behavior, language, and attitude) toward others. Professional demeanor also includes using a laptop computer only for academic purposes during class and turning off the ringer on your phone. If there is an emergency requiring a cell phone to be left on during class, please notify the instructor about the situation and respectfully leave the room to answer your phone.

Assignments

We will try to make the purpose of each assignment clear. If you have questions about the purpose of the assignment or what is expected of you, please ask. All assignments are due via eLC on the due date listed in the syllabus. **Late assignments will be assessed a penalty of 10% per day of the grade unless there are extenuating circumstances that are discussed with us in advance.**

Assignment Overview

Assignment	Percent toward final grade	Due Date
Participation, Reading Quizzes, Article Critiques, and other Daily Assignments	20%	Various
Technology Review	15%	Various
Reflections	15%	Various
Course Project	50%	June 6
Total:	**100%**	

Written assignments and presentations will be assessed on the quality of your writing and/or presentation as well as your interpretation and understanding of course content. Each assignment will be graded on a 100 point scale:

A: 93-100	**C+**: 77-79
A-: 90-92	**C**: 73-76
B+: 87-89	**C-**: 70-72
B: 83-86	**D**: 60-69
B-: 80-82	**F**: 59 and below

Final grades will be based on the overall average of all assignments and will be assigned using +/- grades per university policy.

Participation, Daily Assignments, & Quizzes

In order for everyone to benefit from the discussions and class activities, please exercise the utmost professionalism in your interactions during class. Monitor your participation to be sure that you are not dominating the conversation or are not being shut out of the discussion. Remember that the quality of

your participation is more important than the quantity. Be respectful in the way you assert your opinions and ideas and in the way you respond to the ideas and opinions of others. Remember to disagree with ideas, not with people.

At times, the instructor will give assignments related to specific class activities. These assignments will be announced in class. The students will need to complete the assignments by the given deadline by either submitting them via eLC or bringing them to class.

Finally, quizzes will be given throughout the semester on the assigned readings. These quizzes may be unannounced and are planned for 15-20 minutes. The quizzes will deal with the big ideas from the readings and discussions from the most recent sessions.

Article Critiques (EMAT 6700 students only)
Graduate Students will be required to read three articles in mathematics education research journals that focus on the teaching and learning of mathematics using technology (the instructor may provide the articles). For each article, write a 3-page, double-spaced summary, critique, and reflection on how this article may benefit your future teaching and research. The critiques are due by 11:59 PM on the following dates: 5/21, 5/29, and 6/4.

Technology Review Assignment and Presentation
Technology is pervasive. There are many wonderful tools, programs, and applets available to classroom teachers that assist in the teaching and learning of mathematics. Each student will select a technology tool, present the tool by engaging the class in an exploration using it, and create a wiki page that reviews and critiques the tool. More details will be given in a separate document.

Reflections
In addition to daily participation you will be asked to write reflections on the readings and/or class activities. These reflections will be due each Wednesday and are to be submitted via eLC. You will type a (at least) 2-3 page reflection on any one (or two) event(s) (this may include readings, in-class activities, assignments, etc.) in the class meetings thus far. Reflections are designed for you to relate what you are learning in class to your own practice or experience. Choose one aspect that was of interest to you, and discuss it in depth. In grading your reflection paper we will be looking for:

- a well-developed reason on why you chose the event to reflect upon
- thoroughness in regards to your thinking and understanding of the event(s)
- how you may use it to benefit your future teaching and current professional learning
- coherence and the quality of writing (this includes proper citations)

CourseProject
The purpose of this assignment is to create a sequence of activities that employ technology in meaningful ways. The final project is intended to allow you, individually, in pairs, or in trios, to develop a complete teaching resource package for a unit to support implementation of a selected topic from the Common Core Standards. The package should provide student materials, detailed guidelines related to all activities of student and teacher, including assessment and evaluation, and justifications for your selections. Reflections from each member of the group should discuss connections, applications and impacts of your development experiences into future teaching practices. Your project must make effective use of appropriate technologies and be accessible through the Internet. The rationale for the choice of technologies must be clearly stated in the report. More details on the Final Project, including rubrics for each section, will be given in a separate document.

Note on Written Requirements

All written work for this class should be double-spaced, with 1-inch margins all around and 12 point font. All written assignments will be submitted via eLC unless otherwise specified by the instructor. High quality written work will take advantage of the theoretical and practical ideas set forth in your reading assignments and discussed in class. In particular, you should draw on the *Principles and Standards for School Mathematics* whenever possible. Proper citation, in the format and style of the American Psychological Association (APA), of all reference sources is required for every assignment (for information about APA guidelines visit the UGA library website: http://www.libs.uga.edu/ref/citation.html). Please utilize the resources available to you in order to ensure the quality of the work you submit. For instance, have a classmate critique your assignment or visit the campus writing center.

University Policies

Honor Code and Academic Honesty Policy

University policies regarding course withdrawal and the assignment of incomplete grades will be followed. It is your responsibility to be familiar with these policies. As a University of Georgia student, you have agreed to abide by the University's academic honesty policy, "A Culture of Honesty," and the Student Honor Code. All academic work must meet the standards described in "A Culture of Honesty" found at: www.uga.edu/honesty.

Lack of knowledge of the academic honesty policy is not a reasonable explanation for a violation. Questions related to course assignments and the academic honesty policy should be directed to the instructor. Students with disabilities who require accommodations in order to participate in course activities or meet course requirements should contact Dr. Smith immediately.

Americans with Disabilities Act

The University of Georgia seeks to fully comply with the Americans with Disabilities Act (ADA). Students requesting accommodations based on a covered disability must go to the Disability Resource Center in 205 Clark Howell Hall to arrange the necessary accommodations. They can be reached at 706-542-7721.

Tentative Plan (subject to revision)

Date	Topic	What's Due?
	Week 1 - Geometry	
T 5/14	Syllabus, Introductions, How does technology change the way we think about mathematics, Dynamic Environments Tech: GSP	
W 5/15	Dynamic Geometry - Facets of the tool Tech: GSP and Geogebra	**Course Project Description Due**
R 5/16	Java sketch – Pre Constructed vs student constructed Tech: GSP Technology Presentation	
F 5/17	Work on Project and Java sketch Technology Review Presentation	• **Reflection 1 Due**
	Week 2 – Number and Algebra	
M 5/20	Calculators & Talent Show Tech: GC, Broken Calculator, Excel Technology Review Presentation	• **Article Critique 1 Due (6700 Students only)**
T 5/21	Parameters Exploration Tech: GSP, Fathom, GC, Excel, Shodor Technology Review Presentation	
W 5/22	Geometry And Algebra connections - Dynagraphs Tech: GSP Technology Review Presentation	• **Course Project Intermediate Reflection Due**
R 5/23	Modeling Tech: GC, CBR Technology Review Presentation	
F 5/24	Work on Project Technology Review Presentation	• **Reflection 2 Due**
	Week 3 – Connected Classroom	
M 5/27	**HOLIDAY – NO CLASS**	
T 5/28	Flipped Classroom Tech: Cameras, Screen-Capture Technology Review Presentation	• **Article Critique 2 Due (6700 Students only)**
W 5/29	Mobile Technologies Tech: QR Readers, Apps Technology Review Presentation	• **Course Project Intermediate Reflection Due**
R 5/30	Connected Classroom Tech: TI-Connect Technology Review Presentation	
F 6/31	Work on Project Technology Review Presentation	• **Reflection 3 Due**
	Week 4 – Probability	
M 6/3	Probability – Simulation Tech: GC, Excel, Technology Review Presentation	• **Article Critique 3 Due (6700 Students only)**
T 6/4	Probability – Simulations	

	Tech: Fathom Technology Review Presentation	
W 6/5	**FINAL EXAM – Final Course Project Presentations**	• **Course Project Due** • **Course Project Reflection Due**