

**The Department of Mathematics Education**  
**COURSE OUTLINE- EMAT 4600: Problem Solving in Mathematics**  
**Spring 2007**

Instructor	Nicholas Oppong
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Classroom	111/113 Aderhold Hall
Meeting Times	5:00--7:45 Tuesdays
Final Exam	Fri, May 6, 2005, 3:30 - 6:30 pm

### **Course Description**

Mathematical problems with emphasis on exploring various mathematical contexts, on posing and extending problems, and on communicating mathematical problems and solutions.

Undergraduate prerequisite: [EMAT 3500 or (MATH 2210 and MATH 2210L)] or permission of department.

### **Goals**

The emphasis is on exploration of various mathematics contexts to learn mathematics, to pose problems and problem extensions, to solve problems, and to communicate mathematical demonstrations. The course will concentrate on using media, technology, references, colleagues, various software applications and other resources to pose or search for existing rich mathematics problems, and solve and extend the problems.

### **Instructional Materials Source List**

National Council of Teachers of Mathematics Principles and Standards for School Mathematics. (2000). (Available at <http://standards.nctm.org/>).

National Council of Teachers of Mathematics, Commission on Standards for School Mathematics. (1989). [\*Curriculum and evaluation standards for school mathematics\*](#). Reston, VA.: The Council. (Available at <http://standards.nctm.org/info/resources.htm>).

### **Technology Environment Management / Electronic Portfolios.**

You will need USB Flash Drive. All course work must be a part of your electronic portfolio, and must be well organized. **Please:**

- Close all applications and leave the desktop clean when you are done.
- Close all links to other computers when you are done.

### **Sample Activities**

**Readings related to Problem Solving:** You will be expected to find, read, summarize, critique, and reflect on articles related to problem solving.

**Searching for Resources:** You will be expected to search for existing rich mathematics problems and how they have been solved in multiple ways by different people, critique the problems and solutions, and provide your solutions and extensions to the problems.

**Rich Problems/Explorations**

You will be expected to write rich mathematics problems. You will be expected to solve your problems and discuss extends.

**Final Project-Pose, solve, and extend 10 problems/Submission of your work to an electronic journal**

The National Council of Teachers of Mathematics and other professional organizations provide opportunities to share your work online. (Members of NCTM may see example at [http://my.nctm.org/eresources/journal\\_home.asp?journal\\_id=6](http://my.nctm.org/eresources/journal_home.asp?journal_id=6)). You can submit your best work to a journal for publication in lieu of Final Exams.

**Grading**

Grading will be based on the following criteria:

Item	Points
Participation/Attendance/Assignments	20
Electronic Portfolio	20
Class Project (Problem Solving Unit)	30
Final Project (Pose, solve, and extend 10 problems)	30

**GRADING SCALE:** A 94-100 A- 90-93 B+ 87-89 B 84-86 B- 80-83 C+ 77-79 C 74-76 C- 70-73 D 65-69 F 64 & below.

**Attendance:** All students are responsible for maintaining the highest standards of honesty and integrity in every phase of their academic careers. The penalties for academic dishonesty are severe and ignorance is not an acceptable defense. Participation in class discussions will be an important component of this course. One emphasis of this course is your professional development. Part of being a professional educator is being a good student. Being a good student involves more than just coming to class and completing assignments. It includes demonstrating a professional demeanor while in class and attending conferences and colloquia. No rude or disrespectful behavior will be tolerated during class meetings or while attending conferences and colloquia. Disagreement during professional discussions is good and often productive in developing a deeper understanding of the concepts being discussed. Disagreement in a discussion does not warrant yelling or disrespectful language or behavior. Repeated demonstration of unprofessional demeanor during class or while attending conferences and colloquia may drop your grade or you may be withdrawn from the course. Regular and punctual attendance is expected. Excessive absences (2 or more hours) without excuse will drop your grade or you may be withdrawn from the course.