Northern Michigan University Winter 2008

MAED 535 Problem Solving and Recreational Mathematics

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COURSE OVERVIEW: This class will give you the opportunity to:

- explore selected topics in problem solving and recreational mathematics with emphasis on understanding their underlying concepts and principles and evaluating their potential to have impact on the elementary or secondary mathematics curriculum;
- develop a repertoire of problem-solving heuristics and mathematical-thinking skills and apply them to new and unfamiliar problems;
- solve problems, perform experiments, and conduct open-ended investigations that embody applications of problem solving and recreational mathematics;
- plan and teach lessons based on problem solving and recreational mathematics to your own students;
- evaluate instructional strategies and alternatives for teaching selected topics in problem solving and recreational mathematics;
- survey school curricula to identify opportunities to integrate problem solving and recreational mathematics;
- review both historical and contemporary recommendations for teaching problem solving and recreational mathematics and examine their implications for teaching today;
- formulate action plans for improving your own teaching of problem solving and recreational mathematics in your classes.

SCHEDULE:

CLASS SESSIONS: -- Class meets on the following four Saturdays:

January 19, February 16, March 15, and April 5
9:30 a.m. to 3:30 p.m. eastern time

MAKE-UP DAY: — Saturday, April 19, in the event that inclement weather causes cancellation of a regularly scheduled Saturday class. Announcements of official NMU closings due to weather are broadcast on local television and radio stations (especially NMU Channel 20) and are available by calling 906-227-BRRR (2777).

Class originates in West Science 3616 on the NMU campus with a remote site at the Delta-Schoolcraft ISD.

BRING YOUR LUNCH: — Classes use an interactive workshop format. In the interest of those who travel long distances to attend class, we will not prolong the sessions by taking a formal lunch break. You are welcome to bring your lunch. There will be ample opportunities during the session for you to eat a lunch or snack.

MATERIALS:

- Bring the usual mathematics tools—ruler, compass, protractor, eraser, etc.
- Colored pencils
- Calculator of your choice
- Computer with Internet assess and with spreadsheet (e.g., Excel) and *The Geometer's Sketchpad* software.
- Graph paper and dot paper

ASSIGNMENTS AND CLASS ACTIVITIES:

The focus of this course is on the NCTM Process Standards: problem solving, reasoning and proof, communication, connections, and representation. Assignments are meant to engage you in solving problems that span the spectrum of the school curriculum. An important goal of the class is also to engage you in reflecting on and evaluating mathematical thinking in the context of your own teaching responsibilities. In other words, try to incorporate selected problems in your own classroom. (If you are not in a classroom this semester, try the problems on your family or friends in order to get some insights into how different people think about and solve problems.)

Between the regular Saturday class sessions, you are expected (read "required") to log on to the WebCT class site **at least once a week** to **read what classmates have shared** and **post your own contributions** to the on-going class discussion there. Each week, one or more new questions will be posted—and class members are expected to post

their own questions to each other as well. The nature of these discussions will be to share what worked or didn't work in your problem-solving attempts and in your class and to exchange ideas with other teachers. (WebCT keeps a record of the nature and frequency of individual on-line participation, and these records are monitored and factored into the course evaluation.)

GRADING:

Grading is on an A-F scale; grades are based on attendance at all classes, active participation in in-class and on-line activities, knowledgeable discussion of assigned readings, completion of problems and assignments, presentations to the class, and timely participation in on-line exchanges.

ON-LINE COURSE CONNECTION:

To participate in the WebCT portion of the course, you need Internet access. You also need an NMU user ID and password which are provided for enrolled students at no charge. Your user ID and password should have been supplied for you when you registered. If for any reason you did not get them, or do not know what you did with them, you need to contact the Help Desk in the Academic Computing Center (lower level of the LRC; 227-2468). They will not give you the information over the phone, but will mail it to you.

TO ACCESS WEBCT, DO THE FOLLOWING:

- Log on to <http://webct.nmu.edu>
- On the first page, click on “log in to my webct”
- Enter your user name and password
- Click on MAED 535

Select “discussion” on the class home page (the push-pin icon). There you will find one or more questions that await your response. Answer each question and post your reply. Check back later to see responses from other class members and to reply to one another. This is also the place where you should post your own questions and initiate class discussion.

Note: If you try to log on from your school and are unable to do so, check with your school’s technology coordinator. Some schools erect firewalls to prevent students from unrestricted use of the Internet.

YOUR FIRST WEBCT ASSIGNMENT—DO THIS RIGHT AWAY:

As a reality check to make sure you can get on, log on to WebCT within the next couple days. In the discussion section, post a message in which you introduce yourself to the class. Tell us where you teach, what you teach, what your interests are, and anything else that will help class members to get to know one another. Your posting will let me know that you can successfully log on and participate in the exchange. If you cannot get through, contact me immediately via e-mail. **PLEASE DO NOT PUT THIS OFF.**

If you have a need for disability-related accommodations or services, please inform the Coordinator of Disability Services in the Disability Services Office by: coming into the office at 2001 C. B. Hedgcock; calling 227-1700; or e-mailing disserv@nmu.edu. 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.