

Math 125: Topics in Mathematics for Teaching

Spring 2011 Syllabus

Class Meetings:	PPHAC 232 MWF 2:35pm–3:45pm
Office Hours:	PPHAC 215 TuWTh 9-10am, <i>or by appointment</i>
Instructor:	Kevin Hartshorn
e-mail:	hartshorn@math.moravian.edu
Website:	http://math.moravian.edu/hartshorn/125

1 Required Materials

The text for this course is *Mathematics for Elementary Teachers* by Musser, Burger and Peterson, Eighth Edition.

You may find it useful to have a basic calculator in this course. The calculator included in most cell phones, Androids, and iPhones will be sufficient. However, for exams, you will not be allowed to use your cell phone or similar device.

2 Goals and Objectives

The primary goals of this course are to provide a deeper understanding of mathematical concepts, methods of reasoning, and techniques of calculation that are taught in the elementary grades. Specifically, a successful student will be able to:

- use the mathematical content of this course to model and solve realistic problems;
- use mathematical reasoning to find patterns, make and test conjectures, and create simple proofs of find counterexamples to prove or disprove these conjectures;
- communicate results and conjectures using words, tables, symbols, and graphs;
- make connections between mathematical topics and other areas of mathematics, other disciplines, or situations in daily life;
- use technology as a tool to help solve problems;
- use visual and tactile aids (manipulatives) to make mathematical concepts more concrete;
- work well as part of a team to define, solve, and report on projects.

Topics will include: sets, whole numbers, properties of numbers, fractions, decimals, numerical operations, decimals, ratios, proportions, percent, integers, statistics, and geometry. These topics are covered in chapters 1 through 7 and chapters 10 through 14 in the text. The precise coverage of topics will vary depending on the progress of the semester.

3 Grading and Assessment

Your course grade will be computed based on a raw percentage score, broken down as shown in the table below. Note that these numbers are to serve only as a general guide and your grade may be adjusted based on the judgement of your professor.

40%	Written work and problem sets
25%	Average of three midterms
10%	Average of two group presentations
5%	Culture Points activities
5%	Class participation
15%	Final Exam
100%	Total

When computing your score at the end of the semester, an A (+ or –) is typically given to a score of 85% or above, a B (+ or –) to a score between 70% and 85%, a C (+ or –) to a score between 60% and 70%, and a D (+ or –) to a score between 50% and 60%. These values are subject to change and are meant only as a rough guideline, and the final assignment of grades will be determined based on the performance of the entire class and the judgement of the professor.

Except for the midterms and final exam, all assignments in this course will be scored on a 10 point scale.

3.1 Written work and problem sets

Problem sets will have two parts: ungraded computational practice and graded conceptual problems. Your reflection on the computational practice problems will count as one problem in the homework set.

Computational Practice

Solutions for the computation problems will be put on the class web page 24 hours before the due date. Use these solutions to check your work.

I will not grade the problems in this section. Instead, you will be asked to write a half-page reflection on your work on the problems. The reflection should discuss how well you did on the problems and what troubles you encountered. If there is something in these problems that you feel I should know about or that gave your particular trouble, use the reflection to let me know.

Conceptual Questions

There will be a small selection of conceptual questions for you to answer. Your work must be *neat*, you must write the answers *in order*, you must use a *single column* format in your writing, and you must *staple your papers*. Sloppy work will be penalized.

3.2 Midterms and Final Exam

The midterms will be in-class exams on **Wednesday, February 9**, **Friday, March 4**, and **Friday, April 8**. The final exam will take place on **Friday, May 6 at 8:30am**. All will be closed book, though the specific constraints for the exams will be outlined as the time approaches.

Calculators may be used on the exam. HOWEVER: calculators must only include basic functions (no programmable calculators or graphing calculators allowed) and calculators cannot have internet or cellular access (no cell phones, smart phones, iPods, etc.). A limited number of calculators will be provided if you feel that one is necessary.

3.3 Class Presentations

Everyone will join a group that will run the class discussion on two separate days. For the class discussion, you group will be responsible for assigning the homework problems, developing an in-class activity, and proposing assessment questions for the exam.

The first round of group presentations will be in mid-February, and the second round will be during the last weeks of the semester.

3.4 Culture Points

Roughly every two weeks, you will be asked to find information related to mathematics and teaching. On completing the reading/activity, you will write a short response for submission. We will then take time in class to discuss your findings.

Some possible topics to explore are: math anxiety in the classroom, the use of applied examples in teaching math, gender and race in mathematics education, the role of standardized tests. If you have suggestions for a culture points topic, please let me know.

3.5 Attendance and Participation

Each class meeting will be an important step in learning the material for the course. Every day, I will collect some writing or worksheet reflecting your work for the day, which will count toward your class participation grade. If you miss class, you cannot get credit for this assignment (regardless the reason for your absence).

You are responsible for any class notes and information that were taken during that class. If you know that you will be missing a class (due to sports or other activities), let me know ahead of time. If there are special activities/handouts/etc. for that class, we can arrange to get you the information to help prepare for the next class.

Get to know your classmates! If you will miss a class on a day that homework is due, have a classmate bring your homework in for you. As a rule, late work will not be accepted. Note that you can submit reading responses from home.

4 Other Issues

4.1 Academic Honesty

Students are expected to adhere to the Academic Honesty policy as described in the Student Handbook (<http://www.moravian.edu/studentLife/handbook/academic/academic2.html>). Any violations of this will result in severe penalties on the assignment, a report to the Dean, and the very real possibility of failing the course.

Reading Responses

When faced with difficulty in mathematics, it helps to work through problem with a colleague. Thus I welcome and encourage you to work with friends, tutors and myself in working through the readings leading up to discussion. In the first weeks of class, I will encourage you to exchange e-mail address or cell phone numbers.

When you work through the problems connected with each reading, you are welcome and encouraged to work with your friends and classmates. Feel free to exchange ideas as your work through the reading problems.

HOWEVER: when writing your reading response, you should *work on your own*. The summary of the text and the question you raise should be yours and yours alone.

Problem Sets

Problem sets should be treated as take-home midterms. You may use your text, and class notes, *Maple*, or any of the resources described in the “Required Materials” section of this syllabus. You may not consult with friends, colleagues, or use any on-line resources other than those described in this syllabus. If you use *Maple* or any other computational technology, you are expected to clearly indicate how you used that technology in your solution.

4.2 Learning Disability Accommodations

Students who have documented learning disabilities and wish to request accommodations for this class should contact the Learning Services Department. Accommodations cannot be provided unless official documentation is received from the appropriate campus office.

4.3 Final reminders, tips, and disclaimers

- **Visit my office:** I am more than happy to help work through the readings, address any questions you have about the problem sets, or talk with you about the progress of the course. Feel free to stop by to ask questions about being a mathematics major, about life at Moravian, or just to let me know what’s on your mind.

You can also communicate with me via e-mail (hartshorn@math.moravian.edu).

- This syllabus is subject to change through the semester. The most recent version of the syllabus can be found at <http://www.math.moravian.edu/hartshorn/125/>.
- Final determination of your course grade is subject to my discretion as professor of the course.