



<b>Course Objectives</b>	<p>To develop logical thinking skills and to develop the ability to think more abstractly in a proof oriented setting.</p> <p>To develop the ability to construct and write mathematical proofs using standard methods of mathematical proof including direct proofs, mathematical induction, case analysis, and counterexamples.</p> <p>To develop the ability to read and understand written mathematical proofs.</p> <p>To develop talents for creative thinking and problem solving.</p> <p>To improve the quality of communication in mathematics. This includes improving writing techniques, reading comprehension, and oral communication in mathematics.</p> <p>To explore and understand the concepts described in the course content above.</p>
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## **Grading for the Course**

### **Homework**

Daily reading and exercises will be made and homework will be reviewed in class. These homework assignments will not be collected.

### **Preview Activities** (10% of the course grade)

One of the unique features of the textbook is the set of Preview Activities at the beginning of each section. Students will complete these activities prior to the classroom discussion of each section. Each student can do them individually, but it is strongly recommended that students work in teams of two, three, or four students to complete these preview activities.

The purpose of the preview activities is to prepare the students for the classroom discussion of the section. It must be emphasized that it is permissible to make mistakes on the preview activities. In fact, the place to make mistakes (and then correct them) is on the preview activities.

Before the classroom discussion on a section, at least one of the preview activities for that section will be collected and graded. Grading will not be based on whether or not everything is correct, but rather on whether or not a **serious and substantial effort** was made to complete the Preview Activity. (Part of this effort is to write your answers in complete sentences using correct mathematical terminology and notation.) Each Preview Activity that is graded will be graded on a 4-point scale.

### **Assignments** (20% of the course grade)

During the semester, there will be two or three team assignments. These assignments may be done in teams of 2 or 3 students. For each assignment, each team must hand in one completed assignment. By including the names of all team members, the team is stating that each team member participated significantly in the development of the conjectures and proofs in this assignment and that everyone on the team understands the proofs. Ideas from these assignments may appear on the midterm or final exam.

**Mid-Term Examination** (20% of the course grade)

A mid-term examination is tentatively scheduled for Thursday February 21, 2008. There may be a take-home portion for this exam. If so, the take-home portion will be due at the start of class on Thursday February 21, 2008. No make-up exams will be given without permission from the instructor prior to the date of the exam.

**Portfolio Project** (30% of the course grade)

You will be given twelve mathematical problems to complete which will be included in a "MTH 210 Portfolio." With the exception of the last problem you include in your portfolio, you may hand in each of these problems two times to be critiqued. After each submission, you have the opportunity to rewrite your portfolio proof prior to submission for a final grade. However,

- No more than two problems may be submitted for review on a given day; and
- No more than four problems may be submitted for review during any week.

The portfolio will be graded on a 140-point scale. Each problem in your portfolio will be graded on a 10-point basis (for a total of 120 points). In addition, there will be 20 points possible for submission of drafts for review by the professor. Information about this is included in the Guidelines for the Portfolio Project.

The portfolio problems must be completed using a word processor capable of producing the appropriate mathematical symbols and equations. More details on the process of writing and rewriting as well as due dates for submissions of drafts will be given within the first week of the course and in the Guidelines for the Portfolio Project.

**Final Examination** (20% of the course grade)

The final examination will be a comprehensive test that will be graded on a 150 point scale. The final exam is scheduled for Monday April 21, 2008 from 10:00 a.m. to 11:50 a.m

**Course Grades**

Grades for the courses will be no lower than the grades determined from the following scale:

Grade	Minimum Score	Grade	Minimum Score
A	93%	C+	77%
A-	90%	C	73%
B+	87%	C-	70%
B	83%	D+	67%
B-	80%	D	63%

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## **Expectations for the Course**

This is the Supplemental Writing Skills course for the mathematics major. You will be expected to spend a great deal of time writing and rewriting your essays, assignments, and problems in your portfolio project, and you will be responsible for the mathematical content in this course. The most important rule for this course is that **you cannot get behind in your work!! Always stay up to date with the material in this course. Make succeeding in this course a priority** because this course is an important prerequisite for most upper level mathematics courses.

### **Attendance**

Because this is a discussion-based course, attendance in class is critical to your success in this course. You are expected to be present and on time each day we meet. You are responsible for announcements made in class concerning material covered, assignments, changes in the syllabus or due dates, or anything else pertinent to the course.

### **Preparation**

It is imperative that you work on a consistent basis. This applies to both the day-to-day work to prepare for class as well as the more long-term work such as the research and writing assignment and the portfolio project. You should keep a well-organized record of your study notes, completed problems, and problems in progress for future reference. You must understand that a great deal of your learning in this course must occur on your own. It is your responsibility to read the text, do the problems, be prepared for class, and to seek help as needed.

Everyone must devote substantial time to carefully reading the textbook in order to come prepared to class to discuss the subject for the day. In every class meeting, every student will be expected to participate aloud at least once.

### **Participation**

In every class meeting, there will be ample opportunity for you to actively participate. Through questions asked in lecture, brief exercises for small teams of students, and discussion of homework problems, you will be able to check and demonstrate your understanding of the material. You must be prepared and up to date to participate effectively. In addition, you will have the opportunity to ask questions in class. This is an important part of the learning process as I cannot respond to concepts that are causing you difficulty if you do not ask me about them. I expect that everyone will share in this important part of the learning process for this course.

### **Due Dates**

All due dates for the course will be strictly enforced. It is expected that all assignments will be turned in by the due date. No late work will be accepted without prior approval from the instructor.

### **Honor System and Academic Honesty**

It is expected that students will not have given nor received unauthorized aid in any work that is submitted for a grade in this course. Please refer to and carefully read the policy on academic honesty and plagiarism

included at the end of this syllabus. Note well the penalties for such behavior in the course. On every assignment, I reserve the right to discuss the nature and origins of your work with you prior to awarding a grade on the work.

### **Graded Work and the Use of a Word Processor**

I expect your very best work on all graded assignments. All course writing should adhere to the writing guidelines and principles that will be established in this course. For papers to be handed in, please use pen or pencil on loose-leaf paper, stapled if there is more than one page. All solutions for the problems on the Portfolio Project and all drafts of the research assignment must be written on a word processor capable of producing the appropriate mathematical symbols and equations. Microsoft Word and its Equation Editor, which is available on the student network, is one such word processor. Use 12 point font and standard margins. All such papers must be spell-checked and proofread for grammatical correctness.

### **Mathematical Writing**

One of the primary objectives of this course is to learn to write mathematics well and in particular, learn to write mathematical proofs. Writing is an important part of communicating mathematical results. You will be required to write mathematical proofs and solutions to mathematical problems on the tests and assignments for this course. Writing proofs and solutions means more than writing formulas and circling an answer. It requires explanations of all significant steps taken in the solution of a problem. These explanations must be written in complete sentences and paragraphs with appropriate formulas and graphs included. The grading of the writing assignments will be based on the quality of the writing, the quality of the mathematical content, and the logical organization of the writing.

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## Academic Honesty and Plagiarism Policy

One of the primary goals in this capstone course is to get you to “think like a mathematician.” Explicitly, the point is for you to deepen your own understanding of mathematics and to gain individual appreciation and insight regarding the nature of mathematics.

As such, all of the work that you complete as part of the graded requirements for this course must be your own. In everything that you write, I will be looking to find your personal understanding and development in the course of studying the material. To be clear, I have no interest in you emulating the work of one of your classmates, replicating the efforts of a student from a prior semester in MTH 210, nor in work taken from an external resource such as a textbook or Internet site. All of this is to say that your work must be completed with the highest level of academic honesty and integrity, and that plagiarism will not be tolerated.

This document establishes our guidelines for the semester regarding academic honesty and plagiarism, hopefully setting appropriate boundaries for each student so that we can achieve the goals stated above for personal learning and understanding. This policy is in effect for all students in MTH 210 for the duration of the term. Please be sure to read it carefully and to honor it accordingly.

**Plagiarism** is the act of submitting the work of someone else as if it were your own. Specifically, this action intends to mislead the instructor to think that the work is the result of learning accomplished by the student named on the paper.

While there are many terrible things about plagiarism, the worst may be that committing the act once will call into question all of your work in a course. In addition, in an environment where students engage in academic dishonesty, the instructor is forced to look at everyone’s work and question it. This is particularly unfair to the students who are doing honest work.

The following are guidelines for avoiding plagiarism in course assignments. The list is representative, but not exhaustive. Evidence of such behavior on any assignment will be grounds for a minimum penalty of zero on the entire assignment. In severe cases, the penalty will be failure of the course. In all cases, the guidelines established in the GVSU catalog and GVSU student code will be followed. I reserve the right to discuss the nature and origins of any assignment with you prior to awarding a grade on the paper.

1. On the assignments, every sentence that you write should be one that you have generated yourself and that you understand. While you are permitted to collaborate on big ideas and hints on problems with classmates, you must be working alone when you write your solutions. All collaboration with homework problems must occur with students in this class who are currently at the same stage of problem solution as you.

To be clear, suppose that you asked 4 different students in the class “How did you do problem 4?” You did this at a time when you had made no personal progress on the problem, and you asked until you found someone who both had the problem completed and was willing to give you a route to the solution. Such an act constitutes plagiarism, for the work is simply not your own. On the other hand, it is entirely fine to work with one or two peers who are similarly stuck and to “put your heads together.”

Do note that your instructor is generous with hints and is always willing to discuss problems with you. While I will never simply give you the answer, I will offer direction and guidance that will assist you in coming to a solution on your own.

2. On the assignments, the primary resource you should use is the course textbook. If you look up relevant review material from a past mathematics course (e.g. calculus), you should cite the book you used and the specific pages you considered. You are not, however, permitted to go looking for completed solutions to current homework problems in any other texts or resources.

*In particular, using the Internet is completely off limits unless specifically allowed on a particular assignment.* Evidence of using Internet sources in your work will result in a minimum penalty of failure of the assignment.

3. On any assignment, it is an act of plagiarism to base your work on the efforts of a friend or acquaintance that has completed the course in a prior term. Be advised that in many instances, other instructors have kept copies of essays, homework assignments, and semester projects and I will be able to access them. I am well aware that students often share past exams, homework assignments, and more with one another. But, such sharing strives to defeat the point of the course for those of you registered this term, and therefore is not permitted. If you have any such materials in your possession, please return them immediately to their rightful owner. Use of such materials in your work this semester is grounds for failure of the course.

Again, the entire point of any course is for you to learn, grow, and mature as a student. Such development can only happen in an environment of academic honesty. I expect that each of you will adhere to these guidelines and that you will play active roles in encouraging your peers to do likewise. At any time, you are welcome to discuss with me questions or concerns that you have regarding this policy, your own work, or the work of your peers.