Math 130A—Pre-Calculus
Spring 2006
MWF 11:00-11:50 a.m.

What we learn to do, we learn by doing--Aristotle

Instructor: Dr. Terri Magnus, Regis Hall 102

Contact information: 897-8462, tmagnus@rivier.edu

Office hours: Please let me know whenever you need help. You are invited to stop by my office whenever I am there or make an appointment. My regular hours are M 3-6, T 2-3, R 9:30-11, F 9:30-11. I will also respond to questions via e-mail.

Textbooks: Functions Modeling Change: A Preparation for Calculus, 2nd ed. by Connally, Hughes-Hallett, Gleason, et al., Wiley, 2004, chapters 1-6, 8, 9. You must have your own copy of the textbook and bring it to class every class meeting. We will regularly use the text during class.

Course description from catalogue:
A study of selected topics from algebra, analytic geometry, and trigonometry with the use of a graphing calculator. Topics include exponents and radicals, inequalities, functions and their graphs, and the fundamentals of trigonometry. Graphing calculator required. Not available for credit to students who have successfully completed calculus in high school or a course equivalent to MA 130 or higher. Exceptions must be approved by the department of mathematics and computer science.

General introduction: As implied in the course title, Precalculus provides the necessary foundation for students intending to continue on to calculus. At the same time, many students are taking the course as their final mathematics requirement or elective. The course will emphasize mathematical thinking, the use of mathematical models, and the understanding of mathematical functions and graphs. Topics are as listed in the catalogue description above. Students will be assumed to have successfully completed the equivalent of MA112, College Algebra, but will be encouraged to review their algebra skills in this course.

Required Course Materials:
- A graphical calculator with a table function. The overhead projector calculator will be a TI-83 and TI-83 (or TI-83+) is encouraged. TI-85’s and TI-86’s are acceptable but slightly more complex. If you own a brand other than TI, you are welcome to use it, but the instructor may not be familiar with the commands. Particularly in this case, make sure you have a manual for the calculator.
- Graph paper
- Pencil and eraser
- Four different colored pencils

Recommended Course Materials:
- Three-ring binder
- hole punch
- ruler
- stapler
- sharpener or extra pencils

Course Objectives:
- To help students understand and appreciate the major concepts of functions
- To prepare students for calculus
- To make students aware of the applications of precalculus mathematics in client disciplines
- To engage students in mathematical reasoning
- To develop students’ abilities to approach precalculus topics from graphical, numerical, and symbolic points of view
To help students learn to read mathematics and to become independent learners of mathematics
To develop students’ abilities to create mathematical models and use these models to solve problems
To engage students in the solution of problems, especially open-ended problems, that apply precalculus topics
To develop students’ ability to write clearly and concisely about mathematical ideas and problem solutions
To give students hands-on experience on the effective and appropriate use of calculators

Teaching Strategies:
• Active student engagement in group work and discussions
• Lecture and discussions with an expectation of student participation and questioning
• Exploratory, intuitive activities that involve students in doing mathematics
• Student reading of mathematics and studying of examples
• Students writing about mathematical ideas
• Practice and learning through homework assignments
• Applications to demonstrate relevance and extend learning
• Students solving open-ended and conceptual problems as well as routine ones
• Quizzes and tests to encourage and monitor learning

Course Requirements:
• Attendance in class
• Homework (completion of both self-assessed and submitted work)
• Active participation and engagement in full-class, small-group, and individual activities
• A short quiz approximately every two weeks
• Three tests
• Final examination

Tests: February 17, March 24, April 21

Cumulative Final Exam: Friday, May 5, 11 a.m.-1 p.m.

Homework: Students should complete all homework problems after the section is discussed in class. “Submitted” problems will be graded by the instructor. Unreadable homework will be refused. The questions at the end of each chapter include exercises and problems. Quizzes will be based primarily on definitions and exercises; however, students must demonstrate their ability to work more involved problems through homework and major tests. Students are encouraged to discuss homework questions with the instructor, classmates, and the department tutor. The work submitted should be your own though. Rework any problems that you received help with (even if it’s from the instructor or on the board at the beginning of class) using your own words and computations. A very limited amount of time at the beginning of each class will be allocated for discussion of homework problems, but you are strongly encouraged to seek help before class when you have more than one question.

Quizzes: Quizzes will normally be given every other Friday (except on a test day). The lowest quiz grade will be dropped and the rest averaged together. No make-up quizzes will be allowed. You are encouraged to study the main concepts of the chapters and practice additional exercises in preparation for the quizzes.

Extra Credit: The instructor believes that it is more important to focus on the material at hand and prepare for tests in advance than to give extra credit for additional assignments after a student does poorly on a test. On the other hand, students are encouraged to take advantage of assistance that is available. Because of this, students may earn 1 point for each visit to the math peer tutoring center in which the student either consults the tutor for assistance or spends at least 20 minutes working on precalculus in the center with classmates during tutoring hours. No more than 5 of these extra points may be credited to each test.

Assessment and computation of grades:
Quizzes       10%
Required Homework      15%
Tests  (14% each)      42%
Participation and in-class activities (see rubric) 8%
Final exam       25%

Participation and in-class activities grade will be based on the following rubric.

<table>
<thead>
<tr>
<th>Level of Attendance</th>
<th>high participation</th>
<th>avg participation</th>
<th>low participation</th>
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<tbody>
<tr>
<td>High (0-1 absences)</td>
<td>A</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>Medium (2-3 absences)</td>
<td>B</td>
<td>C</td>
<td>D</td>
</tr>
<tr>
<td>Low (4 or more absences)</td>
<td>C</td>
<td>D</td>
<td>F</td>
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Course policies:
**Workload:** This course does require a significant amount of work outside of class. Homework problems in MA130 will likely require more time and thought than problems in previous mathematics courses. Scanning the sections in the text and a more thorough reading after class is encouraged. Major definitions should be understood and memorized. Expect to study math four to ten hours outside of class per week. If you’re spending more time, talk to the instructor outside of class. She may be able to help you focus your energies more efficiently and productively as well as help you with your difficulties.

**Attendance and Punctuality:** Active participation requires attendance and arrival to class in time to be prepared for work when the class period begins. You are expected to attend all classes. Much of the learning will take place in classroom activities that cannot be duplicated easily outside of class. If you miss class, you are responsible for doing all classroom activities you missed, getting the notes from a classmate, and turning in all work on the day it is due. If you miss more than six classes, your absence will be reported to the registrar and you must meet with the professor to discuss the advisability of your remaining in the course for the remainder of the semester. Students who miss nine classes may be withdrawn from the course and disciplined by the college. If you anticipate that job-related duties or prior commitments will cause several absences, please discuss the matter with the instructor outside of class before the absences occur.

**Making up tests:** If unavoidable circumstances keep you from attending class on the day of the test, you must contact the instructor promptly to explain the absence and (if approved) schedule a make-up. Postponing study time until the last minute is not an acceptable reason. Medical or court documentation of the reason for absence is advised.

**Making up Snow Days or other cancellations:** It is school policy that classes cancelled due to snow or other reason should be made up. This is especially true with a class like Precalculus which serves as a prerequisite to Calculus. In the case of a cancellation we will meet from 11:00-12:15 (instead of 11-11:50) for two class meetings. Updates will be shared with the class via e-mail and/or blackboard.

**Cell phones:** Cell phones may not be used during class. Your calculator must be a separate device. If you need to be available for emergency phone calls, please set the ringer to silent or vibrate. Leave the room to answer.

**Asking questions:** Questions are encouraged both in and out of class. All students have a right and responsibility to ask questions and give insight related to the understanding of course content. However, the instructor is also expected to cover a significant amount of material to prepare you for future coursework. For this reason students having a large number of questions or significant difficulty with a topic
are expected to seek help from the instructor outside of class. It is in your best interest to ask questions as soon as you have discovered and confirmed that you do not understand something.

Honesty policy: All work turned in on tests, quizzes, and the final must be entirely your own. Behavior contrary to this will result in a grade of F on the test. Serious infractions may result in an F for the course. Regarding homework, the instructor will not give you credit for any work that is copied from another source (from a classmate, instructor, a text, the answer key, web assistance, tutor, etc.). Take notes while getting help, but put aside the notes as you attempt to do the problems on your own. Show all work!

Working in groups: Participation in large and small group discussions in class is required and assessed for active engagement and contribution. In addition, you are encouraged to study together outside of class. The work you turn in should be entirely your own, though.

E-mail: E-mail is a great way to keep in touch during the days we don’t meet. You will be expected to acquire e-mail access so that the instructor can notify you of any announcements. You will also be encouraged to dialogue with the instructor and other students via e-mail as a means of improving your mathematical writing and understanding.

Netiquette: You are encouraged to exercise good writing and social behavior when corresponding via e-mail or discussion boards. Too often I receive e-mails from students that are difficult to comprehend due to missing punctuation, sentence fragments, and abbreviations. Reread your message before hitting send to make sure that the message will not be misinterpreted. Use complete English (not IM) sentences. Avoid criticizing other individuals especially in a public forum or discussion.

Evaluation Criteria for Assignments and Quizzes

<table>
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<tr>
<th>Score</th>
<th>Description</th>
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<tr>
<td>10 (A/A+)</td>
<td>Excellent work. You appear to have a very good understanding of the main concepts and procedures in the assignment. Your answers are thorough, well written, and show insight. Explanations are logical, thorough, and precise. Papers are neat and well organized.</td>
</tr>
<tr>
<td>9 (B/B+/A-)</td>
<td>Above average work. You completed the assignment and appear to have a good understanding of most of the main ideas or concepts. You may have made a few errors, but not many. Explanations show understanding, are logical, and are for the most part complete, but may need some editing.</td>
</tr>
<tr>
<td>8 (B-/C+)</td>
<td>Satisfactory work. You completed most of the assignment and understand some of the main ideas, but need work in other areas. Some of the problems may have been started, but unfinished. Work shows some sense of understanding, but you may need to work on style, completeness, logical order, and/or precision. Graphs may lack clarity. Look over the areas where you had trouble and seek help from the instructor. You may need to be more thorough in your work.</td>
</tr>
<tr>
<td>7 (C/D)</td>
<td>Although you made a good attempt at the assignment, your work shows a lack of understanding, sloppiness or carelessness, or inattention to detail. You may need to include more reasons or steps in your answers. Your work is sketchy, disorganized, or lacking insight. If you had trouble on the assignment, seek help from the instructor. You may have misread the directions for the assignment. Difficult problems may have been not attempted, incomplete, or showed a lack of understanding and direction.</td>
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<tr>
<td>5 or below (F)</td>
<td>Incomplete or poor work. You did not complete most of the assignment. The work that was completed was not well done. You need to include more than just answers in your solutions. If you need help getting started, please ask!</td>
</tr>
<tr>
<td>0 (F)</td>
<td>Not enough was done on the assignment to get credit. Perhaps no paper was submitted or what was submitted was illegible.</td>
</tr>
<tr>
<td>R (hw only)</td>
<td>Redo for credit. You had real difficulties on this assignment and I feel that you would learn a lot from redoing the assignment within two class meetings. Get help with the material!</td>
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Mathematics is not a spectator sport. Just as one doesn’t become a great athlete by watching games, one can’t develop the skill of mathematics by watching the teacher. Give it a try! Take a break and come
back to work at it some more. With practice and hard work will come understanding. You’ll be amazed at what you can accomplish! Be sure to come see me whenever you need a little coaching or pep talk. I’m here for you!

**Other Sources:** You may wish to reference other precalculus texts to see more examples of problems worked out. You may also find college algebra texts helpful in reviewing functions, manipulations, and computations. You may also find college algebra texts helpful in reviewing functions, manipulations, and computations. There are some of each in the library and in the Regis Hall conference room for on-site use. Do not remove the books from the conference room so that other students will have access to them. Talk to me or the department secretary to determine whether a particular book may be checked out.

Last but not least, the department of mathematics and computer science makes peer tutoring available. Tutoring hours will be announced. Be sure to ask the tutor for an extra credit note too! Your instructor encourages you to seek help from the many available resources including herself. That’s what her office hours are for!