Course Number And Title: MATH 1450-01 Pre-Calculus Algebra & Trigonometry

Semester / Year: Fall 2006

Lecture Hours: 5  Lab Hours: 0  Credit Hours: 5

Class Time: 10:00-10:50 a.m.  Days: MTWThF  Room: PS 214

Instructor: Nick DeSalvo  e-mail: ndesalvo@caspercollege.edu

Instructor's Office #: PS 127  Phone: (307) 268-2504

Office Hours:
Mondays: 9:00 – 9:50 a.m., 1:00 – 1:50 p.m.
Tuesdays: 9:00 – 9:50 a.m., [12:00 – 12:50 p.m. on-call Math Lab]*
Wednesdays: 9:00 – 9:50 a.m.
Thursdays: 9:00 – 9:50 a.m., [12:00 – 12:50 p.m. on-call Math Lab]*
Fridays: 9:00 – 9:50 a.m.

Other times may be available by appointment.
*During the Math Lab on-call hours, I will either be in the Math Lab or in my office.

Course Description: Elementary algebraic and trigonometric functions and graphing for mathematics, science, and engineering majors preparing for the regular calculus sequence. Includes materials in both MATH 1400 (Pre-Calculus Algebra) and MATH 1405 (Pre-Calculus Trigonometry).

Prerequisites: A grade of “C” or better in DVST 0930 or an ACT Composite Math score of 23 or better, or the appropriate Compass exam score within the past year.

General Objectives: This course will give students the opportunity to gain mathematical knowledge and skills that will enable them to use algebra and trigonometry as a tool to solve problems and create mathematical models. Students who successfully complete this course (grade of C or better) will be provided with the tools and background necessary to succeed in Calculus I. The course will emphasize problem solving skills, technology, modeling, and communication in mathematics.

Specific Objectives: Students should:
1. Be able to demonstrate their knowledge of the mathematical concept of a function by evaluating a function for a value of the domain and creating and graphing complex functions from simpler functions by algebra operations, compositions, translations stretches, compressions and reflections.
2. Be able to demonstrate their knowledge of polynomial functions by finding zeros of polynomial functions and relating these to solutions of related polynomial equations.
3. Be able to demonstrate their knowledge of exponential functions by using an exponential model of some real world phenomena and solve the resulting related exponential equation to answer questions or make a prediction. Be able to demonstrate their knowledge of logarithmic functions by solving the related logarithmic equation to answer questions or make a prediction.
4. Be able to use the definition of the six trigonometric functions using either the right triangle or the unit circle to evaluate trigonometric functions at standard angles without technology
5. Be able to use trigonometric definitions to solve right triangle application problems
6. Be able to graph functions involving sin(x), cos(x) and tan(x) and understand the concepts of period, amplitude and phase shift. Students should understand how to use technology to produce and analyze graphs.
7. Be able to use the basic trigonometric identities, the angle sum identities, and the multiple angle identities to prove or disprove additional statements concerning the six trigonometric functions.

Methodology: Each day homework problems from the textbook will be assigned for practice (they won't be collected). Assignments of varying possible points depending on length or difficulty will be collected and graded about once or twice per week. These may consist of pop quizzes, projects, homework problems from the text, or supplemental problems handed out by the instructor. Late work will be subject to a deduction of points, and must be turned in before the class gets their graded work returned.

In addition to the assignments, there will be four 100-point exams. These exams will be announced ahead of time.

My policy on taking an exam late: Everyone has one chance to take an exam late, as long as you call and leave a message telling me why you aren't able to take the test on time, and take the exam before the graded exams are handed back to the rest of the class. This option is to be used only for illness, emergencies, etc., and I reserve the right to refuse to allow someone to take a test late for non-emergencies, even if it is your first time (not being ready does not qualiy as an emergency!). If you haven't taken the exam by the time the rest of the class has received their graded exams (or if you have already used up your one chance to take an exam late), then your final exam score will be doubled to replace the missed exam. If you know ahead of time that you will be absent on the day of an exam, arrangements can sometimes be made to take the exam early. If you are involved in a sport or club that may cause you to miss class time, please let me know in advance.

The comprehensive final exam will be worth 100 points and everyone must take it. If your final exam score is higher than your lowest exam score, I will double your final exam score and drop your lowest exam score. If your final exam score is your lowest score, I will not double it. In other words, the final exam is worth either 100 points or 200 points, depending on how well you do on it.

If you are absent for one week or more due to accident, illness, etc., contact the dean of students and explain your reason. Your instructors will then receive a notice explaining your absence.

Evaluation Criteria: The total of your exams, assignments, and final exam will be divided by the total possible points. Your grade will be determined as follows: 90-100%=A, 80-89%=B, 70-79%=C, 60-69%=D, and 0-59%=F. If your average is less than one percentage point of the next grade, I will round up if you have demonstrated good attendance. (For example, if your percentage is 79.2% and you have missed only a few classes, I would be inclined to give you a B. A percentage of 79.0% would remain a C regardless of attendance). Your total points earned will be divided by the total possible points to arrive at your percentage. I use the usual 90 - 100 % = A, 80 - 89 % = B, 70 - 79 % = C, 60 - 69 % = D, 0 - 59 % = F.

Required Text, Readings, Materials:
• A graphing calculator. I will be using a TI-83+ for demonstrations, but most graphing calculators will suffice as long as you have the instruction manual for it. The TI-81, TI-82 and TI-85 are obsolete and may not have all of the functions you will need. The Math Learning Center has calculators available for semester-long rental – but go early before they’re all gone.

Where to Go for Help:
• My office. See the top of the syllabus for contact information and office hours.
• The Math Learning Center (also called the Math Lab) is a place you can go for help. Staff and student workers are there to answer questions, or you can go if you just need a place to do your math homework. The Math Learning Center is located in PS 104. The exact hours it is open will be announced, or you can look on the door.
• The Peer Tutoring Center is located in CE 105, near the Casper College bookstore.
Make sure you get help as soon as you start having trouble!

**Last Date to Change to Audit Status or Withdraw with a W Grade:**
Friday, November 3, 2006

**Student Rights and Responsibilities:**
Please refer to the Casper College Student Conduct and Judicial Code for information concerning your rights and responsibilities as a Casper College Student.

Chain of Command: If you have any problems with this class, you should first contact the instructor in order to solve the problem. If you are not satisfied with the solution offered by the instructor, you should then take your problem through the appropriate chain of command starting with the department head, then the division chair, and lastly the vice president for academic affairs.

Academic Dishonesty - Cheating & Plagiarism: Casper College demands intellectual honesty. Proven plagiarism or any form of dishonesty associated with the academic process can result in the offender failing the course in which the offense was committed or expulsion from school. See the Casper College Student Code of Conduct.

ADA Accommodations Policy: It is the policy of Casper College to provide appropriate accommodations to any student with a documented disability. If you have a need for accommodation in this course, please make an appointment to see me at your earliest convenience.

**Tentative Calendar or Schedule Indicating Course Content:**
(This schedule is tentative and subject to change.)

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<td>chapter 1 topics</td>
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<td>chapter 1 topics</td>
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<td>8/31</td>
<td>2.1 Functions, quiz over chapter 1</td>
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<td>9/4</td>
<td>Labor Day, no classes</td>
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<td>2.1 and 2.2 The Graph of a Function</td>
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<td>2.4 Linear Functions and Models</td>
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<td>9/11</td>
<td>2.5 Library of Functions; Piecewise-defined functions</td>
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<td>9/12</td>
<td>2.5 and 2.6 Graphing Techniques: Transformations</td>
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<td>2.7 Mathematical Models: Constructing Functions</td>
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<td>3.3 Properties of Rational Functions</td>
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<td>3.4 The Graph of a Rational Function; Inverse and Joint Variation</td>
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<td>3.5 Polynomial and Rational Inequalities</td>
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<td>3.6 The Real Zeros of a Polynomial Function</td>
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<td>9/28</td>
<td>3.6 and 3.7 Complex Zeros: Fundamental Theorem of Algebra</td>
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<td>Exam #2</td>
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<tr>
<td>10/5</td>
<td>4.1 Composite Functions</td>
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10/6  4.2 One-to-One Functions; Inverse Functions
10/9  4.3 Exponential Functions
10/10  4.4 Logarithmic Functions
10/11  4.4 and 4.5 Properties of Logarithms
10/12  4.5
10/13  4.6 Logarithmic and Exponential Equations
10/16  4.7 Compound Interest
10/17  4.8 Exponential Growth and Decay; Newton’s Law
10/18  4.9 Building Exponential, Logarithmic, and Logistic Models from Data
10/19  Review
10/20  Exam #3
10/23  Fall Break
10/24  Fall Break
10/25  5.1 Angles and Their Measure
10/26  5.2 Trigonometric Functions: Unit Circle Approach
10/27  5.2 and 5.3 Properties of the Trigonometric Functions
10/30  5.3
10/31  5.4 Graphs of the Sine and Cosine Functions
11/1  5.4 and 5.5 Graphs of Tangent, Cotangent, Cosecant, and Secant Functions
11/2  5.5
11/3  5.6 Phase Shift: Sinusoidal Curve Fitting
11/6  6.1 The Inverse Sine, Cosine, and Tangent Functions
11/7  6.2 The Inverse Trigonometric Functions (continued)
11/8  Review
11/9  Exam #4
11/10  6.3 Trigonometric Identities
11/13  6.4 Sum and Difference Formulas
11/14  6.4 and 6.5 Double-Angle and Half Angle Formulas
11/15  6.5
11/16  6.6 Product-to-Sum and Sum-to-Product Formulas
11/17  Advising Day (tentative)
11/20  6.7 Trigonometric Equations, part I
11/21  6.7 and 6.8 Trigonometric Equations, part II
11/22 – 11/24 Thanksgiving Break
11/27  6.8
11/28  Review
11/29  Exam #5
11/30  7.1 Right Triangle Trigonometric; Applications
12/1  7.2 The Law of Sines
12/4  7.2 and 7.3 The Law of Cosines
12/5  7.3
12/6  7.4 Area of a Triangle
12/7  7.5 Simple Harmonic Motion; Damped Motion; Combining Waves
12/8  8.1 Polar Coordinates
12/11  8.2 Polar Equations and Graphs
12/12  8.3 The Complex Plane; DeMoivre’s Theorem
12/13  8.4 Vectors
12/14  Review for Final
12/15  Review for Final

Final exams week is Monday December 18 – Thursday December 21. The exact day and time of the final exam will be announced later.
No class on the following days: September 4 - Labor Day, October 23-24 - Fall Break, November 17 - Advising Day, November 22-24 - Thanksgiving Break.