MATH 2312: Precalculus
Texas A&M University – Corpus Christi, Section 842, Fall 2011, CRN: 45280

S.T.E.P. COURSE DEVELOPMENT NOTE: THIS SYLLABUS IS SUBJECT TO MODIFICATIONS PRIOR TO COURSE START

I. COURSE INFORMATION

Instructor: Vivian Marie Martinez
E-mail: vivian.martinez@tamucc.edu
Office location: Center for Instruction #311
Office phone: leave message 361-825-3754
Office hours: Tuesday & Thursday 8:45-9:20am & 12:30-1:30pm & by appointments
Meeting place: OCNR 133
Meeting times: Tues/Thurs 11:00am -12:15pm

II. COURSE DESCRIPTION

As suggested by the catalog description (below), this course focuses on algebra and trigonometry concepts underpinning calculus. Topics include data analysis, functions, graphs, limits, trigonometry, exponential & logarithmic functions, other functions, and math modeling.

A more rapid treatment of the material in MATH 1314 and MATH 1316, this course is designed for students who wish a review of the above material, or who are very well prepared. Functions, graphs, trigonometry, and analytic geometry.

Emphasis: This section is enriched with applications and topics in biological sciences.

III. PREREQUISITES for the COURSE

MATH 1314: College Algebra or placement into MATH 2312

IV. REQUIRED TEXTBOOKS and OTHER MATERIALS

- A graphing calculator
- Frequent access to high speed internet, word-processing, and spreadsheet software

V. STUDENT LEARNING OUTCOMES

At the end of the course the student should be able to:

- Manipulate basic expressions:
  - multiply and factor polynomials
  - work with rational expressions
  - simplify rational exponents
  - rationalize fractions
• Solve standard equations and inequalities:
  • solve linear equations
  • solve quadratic equations
  • determine and graph the solution set of an inequality
  • solve absolute value equations
  • solve exponential and logarithmic equations
  • solve trigonometric equations
  • solve systems of linear equations

• Determine features of graphs of functions and circles, create graphs, and transform graphs
  • graph circles whose equation needs to be simplified first
  • determine whether a given graph is the graph of a function
  • graph linear functions
  • recognize the graphs of some basic functions
  • use graphing techniques, such as shifts and stretches
  • determine from a polynomial how its graph will look
  • find axis-intersects for polynomials
  • be able to graph trigonometric functions and their translations

• Determine if given functions have inverses, find inverse functions, and know properties of standard invertible functions
  • determine from the graph of a function whether it has an inverse
  • check whether two functions are inverses of each other
  • find the equation of the inverse of a function
  • use continuous compounding and exponential functions
  • use logarithms as inverse functions of exponential functions
  • simplify logarithmic expressions
  • graph and find values for the inverse circular functions

• Know and apply the trigonometry of triangles and trigonometric functions and identities convert between degrees and radians
  • know the values of the basic trig functions for special angles
  • solve right triangles
• use the circular functions to find coordinates of points on the unit circle
• have the fundamental trigonometric identities memorized
• be able to verify trigonometric identities
• simplify trig expressions using the double angle identities

VI. INSTRUCTIONAL METHODS and ACTIVITIES
The course will be a combination of instructional presentation of new material and concepts, whole-class discussion, individual investigations of mathematics, and optional one-on-one discussion time between students and the instructor outside of class. Students may be required to give individual or group presentations. All students are expected to actively engage in group and whole class activities with respect and perseverance.

VII. MAJOR COURSE REQUIREMENTS and ASSESSMENTS
Final course grades will be the weighted average of mean scores under the following weights:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>10%</td>
</tr>
<tr>
<td>Quizzes &amp; Classwork</td>
<td>15%</td>
</tr>
<tr>
<td>Semester Project</td>
<td>20%</td>
</tr>
<tr>
<td>Two Exams</td>
<td>30%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>25%</td>
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</tbody>
</table>

Final weighted grades are rounded to the nearest percent. Those ≥ 90% earn a letter grade of A, ≥ 80% earn at least a B; ≥ 70% earn at least a C; ≥ 60% earn at least a D; < 60% earn an F.

Homework – Practice is an essential component of developing math skills, and you’ll use a free online homework system (WeBWorK) to practice foundational skills and procedures.

Exams – Show your understanding of the most important concepts in the class through two individual exams during regular class time. Make-up exams are available in case of emergencies, and may be more difficult than regular exams.

Project – You’ll work in a small group to develop basic proficiency with two topics from introductory calculus. See the project guidelines for the topics, grading criteria, deadlines, and presentation dates.

Quizzes, & Classwork – Boost your overall grade by participating in inquiry tasks, whole-class discussion, and group work activities during regularly scheduled class time. Then, demonstrate your mastery of key skills and concepts during in-class group or individual assessments.

Final Exam – complete a comprehensive summative evaluation of your knowledge through an individual exam. The final exam cannot be made-up if missed. If you have a conflict with the scheduled final exam time, please contact me at least one week prior to discuss scheduling options.

» The final exam is scheduled for Thursday, Dec. 8th at 11:00-1:30pm.
<table>
<thead>
<tr>
<th>Week</th>
<th>Day</th>
<th>TOPIC</th>
<th>CONTENT</th>
<th>Textbook</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>R 8/25</td>
<td>Introduction</td>
<td>Syllabus, Pre-assessment</td>
<td>1.1</td>
</tr>
<tr>
<td>2</td>
<td>T 8/30</td>
<td>Data Analysis</td>
<td>Scatter plots, Association, Lines</td>
<td>1.2-1.6</td>
</tr>
<tr>
<td></td>
<td>R 9/1</td>
<td>Model Fit</td>
<td>Least Squares, Residuals, Accuracy</td>
<td>1.7-1.8</td>
</tr>
<tr>
<td>3</td>
<td>T 9/6</td>
<td>Model Comparison</td>
<td>Statistical measures for models</td>
<td></td>
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<tr>
<td></td>
<td>R 9/8</td>
<td>Function Description</td>
<td>Vocabulary, Properties of Function</td>
<td>2.1-2.2</td>
</tr>
<tr>
<td>4</td>
<td>T 9/13</td>
<td>Parent Functions</td>
<td>Domain, Graphing, Common Forms</td>
<td>2.3-2.4</td>
</tr>
<tr>
<td></td>
<td>R 9/15</td>
<td>Curve Fitting</td>
<td>Regression, Transformations</td>
<td>2.5</td>
</tr>
<tr>
<td>5</td>
<td>T 9/20</td>
<td>Function Operations</td>
<td>Composition, Function Arithmetic</td>
<td>2.10</td>
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<td></td>
<td>R 9/22</td>
<td>Composite Graphs</td>
<td>End Behavior, Graphical Inverses</td>
<td>2.11-2.12</td>
</tr>
<tr>
<td>6</td>
<td>T 9/27</td>
<td>Function Modeling</td>
<td>Review for Exam #1</td>
<td>1.1-2.10</td>
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<tr>
<td></td>
<td>R 9/29</td>
<td>Function Modeling</td>
<td><strong>Exam #1</strong></td>
<td></td>
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<tr>
<td>7</td>
<td>T 10/4</td>
<td>Algebraic Inverses</td>
<td>Methods for Finding an Inverse</td>
<td>2.13</td>
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<tr>
<td></td>
<td>R 10/6</td>
<td>Limit Notation</td>
<td>Definition of a Limit, Arrow Notation</td>
<td></td>
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<tr>
<td>8</td>
<td>T 10/11</td>
<td>Polynomials</td>
<td>End Behavior, Roots, Multiplicity</td>
<td>6.7-6.8</td>
</tr>
<tr>
<td></td>
<td>R 10/13</td>
<td>Trigonometric Graphs</td>
<td>Wave Parameters, Parent Functions</td>
<td>5.1-5.2</td>
</tr>
<tr>
<td>9</td>
<td>T 10/18</td>
<td>Trig on the Unit Circle</td>
<td>Sine, Cosine, Angle Measure</td>
<td>5.4-5.5</td>
</tr>
<tr>
<td></td>
<td>R 10/20</td>
<td>Trig on the Triangle</td>
<td>SOH, CAH, TOA &amp; applications</td>
<td>5.6, 5.13</td>
</tr>
<tr>
<td>10</td>
<td>T 10/25</td>
<td>Trig Identities</td>
<td>Pythagorean Identity, Equivalence</td>
<td>5.7</td>
</tr>
<tr>
<td></td>
<td>R 10/27</td>
<td>Trig Identities</td>
<td>Double and Half-angle Identities</td>
<td>5.9</td>
</tr>
<tr>
<td>11</td>
<td>T 11/1</td>
<td>Trig Equations</td>
<td>Techniques for Solving Equations</td>
<td>5.8, 5.12</td>
</tr>
<tr>
<td></td>
<td>R 11/3</td>
<td>Inverse Trig Functions</td>
<td>Graphical inverses, notation</td>
<td>5.10</td>
</tr>
<tr>
<td>12</td>
<td>T 11/8</td>
<td>Trigonometry</td>
<td>Review for Exam #2</td>
<td>5.1-5.13</td>
</tr>
<tr>
<td></td>
<td>R 11/10</td>
<td>Trigonometry</td>
<td><strong>Exam #2</strong></td>
<td>5.1-5.13</td>
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</tbody>
</table>
IX. CLASS POLICIES

Attendance/Tardiness. You’re expected to attend every class session, arrive on time, and complete all in-class activities. If you need to miss part or all of a class session, please contact me before class or as soon as possible. Email is usually best.

Late Homework. Homework will usually be due weekly, and will be subject to “hard deadlines” set through the homework website. No partial credit or extensions are allowed for homework, but your two lowest homework scores will be dropped from the grading.

Cell Phones/Electronic Devices. Please silence electronic devices during class and step out of class to use them. You may not use any personal electronic device during exams.

In-Class Activities. Please take responsibility for the learning of yourself and the others around you in class. By maintaining a spirit of respect and challenge, you can expect classroom activities to be inviting, lively, and challenging.

Dropping a class. I hope that you never find it necessary to drop this or any other class. However, events can sometimes occur that make dropping a course necessary or wise. Please consult with me before you decide to drop to be sure it is the best thing to do. Should dropping the course be the best course of action, you must initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. Just stopping attendance & participation WILL NOT automatically result in your being dropped from the class.

Academic integrity. University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. (Plagiarism is the presentation of the work of another as one’s own work.) In this class, academic misconduct or complicity in an act of academic misconduct on an assignment or test will result in a minimum of a 0 on the assignment or test.

Disability services. The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call or visit Disability Services at (361) 825-5816 in Driftwood 101. If you are a returning veteran and are experiencing cognitive and/or
physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.

**Grade appeals process.** As stated in University Rule 13.02.99.C2, Student Grade Appeals, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Rule 13.02.99.C2, Student Grade Appeals, and University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules Web site at tamucc.edu/provost/university_rules. For assistance and/or guidance in the grade appeal process, students may contact the Office of Student Affairs.

**Classroom Behavior.** Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor's ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

**Changes.** The instructor may amend the syllabus by announcing the changes in class.