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Reviewed by: Nathan Cahoon
Date Prepared: Spring 2024
C & GE approved: January 5, 2024
Board approved:

Mathematics (MATH) 1550 Precalculus & Trigonometry (6 units)

Prerequisite: Successful completion of MATH 1060 with a grade of 'C' or better

Advisory: None

Hours and Unit Calculations:

96 hours lecture. (192 Outside-of-class Hours); (288 Total Student Learning Hours) 6 Units

Catalog Description: Preparation for calculus: the study of polynomial, absolute value, radical, rational, exponential, and logarithmic functions, analytic geometry, and polar coordinates. The study of trigonometric functions, their inverses and their graphs, identities and proofs related to trigonometric expressions, trigonometric equations, solving right triangles, solving triangles using the Law of Cosines and the Law of Sines, and introduction to vectors.

Type of Class/Course: Degree Credit

Texts: Sullivan, Michael. *Algebra & Trigonometry*. 11th edition. Pearson, 2020.

Or any college level text designed for science, technology, engineering and math majors, and supporting the learning objectives of this course.

Additional Required Materials: TI-83/84 calculator

Course Objectives:

By the end of the course, a successful student will:

1. Graph functions and relations in rectangular coordinates and polar coordinates;
2. Synthesize results from the graphs and/or equations of functions and relations;
3. Apply transformations to the graphs of functions and relations;
4. Recognize the relationship between functions and their inverses graphically and algebraically;
5. Solve and apply equations including rational, linear, polynomial, exponential, absolute value, radical, and logarithmic, and solve linear, nonlinear, and absolute value inequalities;
6. Solve systems of equations and inequalities;
7. Apply functions to model real world applications;
8. Prove trigonometric identities;
9. Identify special triangles and their related angle and side measures;
10. Evaluate the trigonometric function at an angle whose measure is given in degrees and radians;
11. Manipulate and simplify a trigonometric expression;
12. Solve trigonometric equations, triangles, and applications;
13. Graph the basic trigonometric functions and apply changes in period, phase and amplitude to generate new graphs;
14. Evaluate and graph inverse trigonometric functions;
15. Convert between polar and rectangular coordinates;

16. Calculate powers and roots of complex numbers using DeMoivre's Theorem; and
17. Represent a vector (a quantity with magnitude and direction) in the form $\langle a, b \rangle$ and $ai + bj$.

Course Scope and Content:

Unit I Trigonometry

1. Apply transformations to the graphs of trigonometric functions and relations;
2. Prove trigonometric identities;
3. Identify special triangles and their related angle and side measures;
4. Evaluate the trigonometric function at an angle whose measure is given in degrees and radians;
5. Manipulate and simplify a trigonometric expression;
6. Solve trigonometric equations, triangles, and applications;
7. Graph the basic trigonometric functions and apply changes in period, phase and amplitude to generate new graphs;
8. Evaluate and graph inverse trigonometric functions;

Unit II Precalculus

1. Synthesize results from the graphs and/or equations of functions and relations;
2. Apply transformations to the graphs of functions and relations;
3. Graph functions and relations in rectangular coordinates and polar coordinates;
4. Recognize the relationship between functions and their inverses graphically and algebraically;
5. Solve and apply equations including rational, linear, polynomial, exponential, absolute value, radical, and logarithmic, and solve linear, nonlinear, and absolute value inequalities;
6. Solve systems of equations and inequalities;
7. Apply functions to model real world applications;
8. Convert between polar and rectangular coordinates;
9. Calculate powers and roots of complex numbers using DeMoivre's Theorem; and
10. Represent a vector (a quantity with magnitude and direction) in the form $\langle a, b \rangle$ and $ai + bj$.

Learning Activities Required Outside of Class

The students in the class will spend a minimum of 12 hours per week outside of the regular class time doing the following:

1. Completing assigned reading from the textbook
2. Completing assigned homework problems and study activities
3. Watching instructional videos
4. Watching videos related to growth mindset and study skills
5. Review how to use technology to solve problems
6. Work on course-related topics in math lab/learning center or office hours
7. Skill practice
8. Problem solving activity or exercise
9. Group Projects

Methods of Instruction

1. Lecture and sample problems created or curated by the instructor
2. Videos that demonstrate how to utilize technology to solve select problems

3. Individual work with appropriate technology
4. Student presentations

Methods of Evaluation

1. Student Presentations
2. Problem-solving assignments or activities
3. Quizzes
4. Exams
5. Project
6. Discussions
7. Written summaries
8. Time spent in Math lab, Learning Center, or using TC tutoring services

Supplemental Data:

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| TOP Code: | 170100 Mathematics |
| SAM Priority Code: | E: Non-Occupational |
| Funding Agency: | Y: Not Applicable |
| Program Status: | I: Program Applicable |
| Noncredit Category: | Y: Not Applicable |
| Special Class Status: | N: Course is not a special class |
| Basic Skills Status: | N: Not Applicable |
| Prior to College Level: | Y: Not Applicable |
| Cooperative Work Experience: | N: Course is not a part of a cooperative education program |
| Eligible for Credit by Exam: | Yes |
| Eligible for Pass/No Pass: | Yes |

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| Discipline | Mathematics |
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