

GENESEE COMMUNITY COLLEGE
Fall 2018

Course: MAT 140

Title: Pre-calculus

Credit Hours: 4.0

Instructor: Barbara Regdos

E-mail: bregdos@aldenschools.org

Phone: 716-937-9116, Ext. 4121

Catalog Description:

Studies polynomial, rational, exponential, logarithmic, and trigonometric functions and their inverses. Four class hours. Not open for credit to students who have credit in MAT 141 or higher. Prerequisite: MAT 136 (with a minimum grade of C) or equivalent by placement.

Prerequisite: Successful completion of Algebra II Course and the Algebra II Regents Exam

Course Objectives:

Upon successful completion of the course, students will be able to perform the following:

1. Given functions of the form $y = f(x)$, evaluate this function at a point, sketch the graph, apply geometric transformations, compute the domain and/or compute combinations and compositions of these functions.
2. Given a function, compute the inverse of this function.
3. Compute the zeros of a polynomial function.
- *4. Given two complex numbers, add, subtract, multiply, and divide these numbers and express the result in standard complex form.
5. Apply the basic properties of logarithms to expand or condense an expression into an equivalent form.
6. Solve exponential and logarithmic equations and application problems.
- *7. Solve application problems involving right triangle trigonometry.
8. Compute trigonometric values of any angle expressed in radians or degrees, and the inverse trigonometry values of any number in the domain of that function.
9. Construct and analyze graphs of the form $y = A\sin(Bx + C) + D$ or $y = A\cos(Bx + C) + D$ and construct and analyze the graph of $y = \tan(x)$.
10. Use basic trigonometric identities to rewrite trigonometric expressions and verify other identities.
11. Find solutions to trigonometric equations over a stated interval by collecting terms, factoring, or extracting square roots.
12. Apply the law of sines and cosines to solve problems involving acute and obtuse triangles.

* This course objective has been identified as a student learning outcome that must be formally assessed as part of the College's Comprehensive Assessment Plan. All faculty teaching this course must collect the required data (see Assessing Student Learning Outcomes form) and submit the required analysis and documentation at the conclusion of the semester to the Office of Assessment and Special Projects.

Cheating is obtaining or intentionally giving unauthorized information to create an unfair advantage in an examination, assignment, or classroom situation. Plagiarism is the act of presenting and claiming words, ideas, data, programming code or creations of others as one's own. Plagiarism may be intentional – as in a false claim of authorship – or unintentional – as in a failure to document information sources using MLA (Modern Language Association), APA (American Psychological Association) or other style sheets or manuals adopted by instructors at the College. Presenting ideas in the exact or near exact wording as found in source material constitutes plagiarism, as does patching together paraphrased statements without in-text citation. Disciplinary action may include a failing grade on an assignment or test, a failing grade for the course, suspension or expulsion from the college, as described in the Code of Conduct. For further information, see

www.genesee.edu/content/academics/student_code_of_conduct.pdf.

****Last Day to Drop this course is October 15, 2018****

Welcome to Pre-calculus!

This course is a tremendous foundation for calculus and many other math and science courses you may encounter. You may take this course for college credit or you may take this course for high school credit alone. Either way I am anticipating a great year with you.

Grading Criteria:

Grading for this course is as follows: **A** 93-100, **A-** 90-92, **B+** 87-89, **B** 83-86 **B-** 80-82, **C+** 77-79, **C** 73-76, **C-** 70-72, **D+** 69-67, **D** 64-66, **D-** 60-63, **F** (Less than 60)

Grades of D+, D, D- and F will not count for college credit.

A. TESTS (50% of grade)

1. Time permitting; there will be 8 unit tests and a final exam.
The Final Exam will be worth 20% of your overall grade.
2. If you are absent on a test day please be ready to take the test on the day you return to school.

B. HOMEWORK ASSIGNMENTS (35% of grade)

1. Homework assignments are an essential part of success in this course. Failure to complete assignments or complete assignments in a timely manner will put you in jeopardy of failure. Expect to have daily assignments that will be posted on the assignment board and in Schoology.
2. Assignments will be graded for correctness. **Homework assignments are due before class begins. A 20% deduction per school day will be applied to assignments handed in late.** Students with legal absences will be allowed to hand in homework on the day they return without penalty. Subsequent homework must be handed in on time thereafter.

C. QUIZZES (10% of grade)

1. Partner quizzes will be given on a frequent basis. This is an opportunity to see what you do and do not understand. Be sure to follow up with me when you are having difficulty!
2. You will only be asked to make-up a quiz if you are absent for more than 2 quizzes during a 10 week grading period.

D. PARTICIPATION (5% of grade)

1. This grade will be based on your attitude, attendance, conduct, and willingness to learn. Please don't hesitate to ask questions!

How Your Grade is Calculated

A weighted average (or weighted mean) is used to compute the marking period grade.

For this course, the following categories and weights are:

Tests – 50% Homework – 35% Quizzes 10% Participation – 5%

Example: Let's assume your final grade averages are as follows. Your exam average was an 83, your homework average was an 85, quiz average 84 and the participation points, 90. To find your overall average you would take the sum of all the grades multiplied by their relative weight. So for these grades, you would have the following computation:

$$(0.50 * 83) + (0.35 * 85) + (0.1 * 84) + (0.05 * 90) = 84.15 = 84 \times 1.05 = 88.2$$

↑

↑

↑

↑

↑

Exams

Homework

Quizzes

Participation

Final marking period average

Required Materials:

Text Title: (Supplied): Pre-calculus with Limits", 4th Edition, by Larson/ Hostetler/Edwards. Published by Houghton-Mifflin, c 2005.

Calculators:

A TI - 83 or 84 plus graphing calculator is required for this course.

Notebook – Spiral 250 pages – we will take lots of notes and examples.

A Positive attitude (required) – it's 90% of the game

Attendance:

Attendance is important. It is extremely difficult to make up 80 minutes of instruction on a frequent basis. As is school policy, unexcused absences will result in grades of zero for assignments collected on the day of absence. Frequent absences will affect your participation grade.

Course Withdrawal:

If you decide you want to withdraw from this class you must do so during the first week!

It is your responsibility to formally withdraw prior to the GCC college deadline date which is October 15, 2018. Check the school website for the necessary dates or contact the registrar's office. Failure to do so will result in a failing grade.

PRECALCULUS OUTLINE OF COURSE CONTENT AND CALENDAR

- **Chapter 1 Functions and Their Graphs**

- [1.1 Functions](#)

- [1.2 Graphs of Functions](#)

- [1.3 Shifting, Reflecting, and Stretching Graphs](#)

- [1.4 Combinations of Functions](#)

- [1.5 Inverse Functions](#)

- Test 1

Week 1

- **Chapter 2 Polynomial and Rational Functions**

- [2.1 Quadratic Functions](#)

- [2.2 Polynomial Functions of Higher Degree](#)

- [2.3 Real Zeroes of Polynomial Functions](#)

- [2.4 Complex Numbers](#)

- [2.5 The Fundamental Theorem of Algebra](#)

- [2.6 Rational Functions and Asymptotes](#)

- [2.7 Graphs of Rational Functions](#)

- Test 2

Week 2-3

- **Chapter 3 Exponential and Logarithmic Functions**

- [3.1 Exponential Functions and Their Graphs](#)

- [3.2 Logarithmic Functions and Their Graphs](#)

- [3.3 Properties of Logarithms](#)

- [3.4 Solving Exponential and Logarithmic Equations](#)

- [3.5 Exponential and Logarithmic Models](#)

- Test 3

Week 4-5

- **Chapter 4 Trigonometric Functions**

- [4.1 Radian and Degree Measurement](#)

- [4.2 Trigonometric Functions: The Unit Circle](#)

- [4.3 Right Triangle Trigonometry](#)

- [4.4 Trigonometric Functions of Any Angle](#)

- [4.5 Graphs of Sine and Cosine Functions](#)

- [4.6 Graphs of Other Trigonometric Functions](#)

- [4.7 Inverse Trigonometric Functions](#)

- [4.8 Applications and Models](#)

- Test 4

Week 6-8

- **Chapter 5 Analytic Trigonometry**

- [5.1 Using Fundamental Identities](#)

- [5.2 Verifying Trigonometric Identities](#)

- [5.3 Solving Trigonometric Equations](#)

- [5.4 Sum and Difference Formulas](#)

- [5.5 Multiple-Angle and Product-Sum Formulas](#)

- Test 5

Week 9-10

- **Chapter 6 Additional Topics in Trigonometry**

- [6.1 Law of Sines](#)

- [6.2 Law of Cosines](#)

- [6.3 Vectors in the Plane](#)

- [6.4 Vectors and Dot Products](#)

- [6.5 Trigonometric Form of a Complex Number](#)

- Test 6

Week 11-12

- **Chapter 7 Matrices and Determinants**
 - [7.1 Matrices and Systems of Equations](#)
 - [7.2 Operations with Matrices](#)
 - [7.3 The Inverse of a Square Matrix](#)
 - [7.4 The Determinant of a Square Matrix](#)
 - [7.5 Applications of Matrices and Determinants](#)

Test 7
- **Chapter 8 Sequences, Series, and Probability**
 - [8.1 Sequences and Series](#)
 - [8.2 Arithmetic Sequences and Partial Sums](#)
 - [8.3 Geometric Sequences and Series](#)
 - [8.4 Mathematical Induction](#)
 - [8.5 The Binomial Theorem](#)
 - [8.6 Counting Principles](#)
 - [8.7 Probability](#)

Test 8
- **Chapter 11 Limits and an Introduction to Calculus**
 - [11.1 Introduction to Limits](#)
 - [11.2 Techniques for Evaluating Limits](#)
 - [11.3 The Tangent Line Problem](#)
 - [11.4 Limits at Infinity and Limits of Sequences](#)
 - [11.5 The Area Problem](#)

Test 9

Week 13-14

Week 15-16

Week 17-19

Final Exam will be the last 2-3 days of school (prior to the Regent's Exam week(s))

Please complete, detach and return to your instructor.

I, _____ (print student name), have read over the Pre-calculus course syllabus and understand the course requirements, policies and procedures as written.

Student signature _____

Parent /Guardian signature_____

Parent/Guardian email address_____

Parent/Guardian daytime phone number_____