**Department Master Syllabus**

**Camden County College**

**Blackwood, NJ 08012**

**Course Title**: Precalculus Mathematics I

**Course Number**: MTH-123

**Dept/Program Affiliation**: Mathematics

**Date of Review: 11/2018**

(This Department Master Syllabus has been examined by the program/department faculty members and it is decided that no revision is necessary at this time.)

**Date of Last Revision**: **11/2018**

(This Department Master Syllabus has been examined by the program/department faculty members and it is decided a change requiring a revision is necessary at this time.)

**N.B.** A change to the course materials alone (textbooks and/or supplementary materials) may not constitute a revision. Any other change to the items listed below on this form is considered a revision and requires approval by the program faculty at a Program/Department Meeting and by the division at a Chairs and Coordinator Meeting.

Credits: 4

Contact Hours: **Lecture** 4 **Lab** 0 **Other**

Prerequisites: MTH-100(Algebraic Concepts) **AND** ENG-013 (Reading Skills III) **OR** proper placement exam scores.

Co requisites: None

**Course Description:** As the first of a two semester precalculus sequence, this is a rigorous course designed for science, technology, engineering, and mathematics majors. Topics include functions and graphs, theory of polynomial equations, polynomial, rational, logarithmic, and exponential functions and applications, linear systems and matrices. The teaching and use of graphing calculators are an integral part of the course to facilitate understanding of salient concepts. **Students are encouraged to purchase a Texas Instruments TI-83/84 Plus calculator.**

**Course Student Learning Outcomes:** (Cognitive, Psychomotor, Affective Domains)

At the end of this course the student will be able to…

* recognize and recall algebraic, exponential, logarithmic, and formulas and identities to draw out factual answers, as assessed by tests, quizzes, homework, or projects.
* perform computations involving complex numbers, finding complex roots of polynomials, and stating the relationship between the subsets of the complex numbers, as assessed by tests, quizzes, homework, or projects.
* describe real world situations through the formulation of mathematical models, and use these models to extrapolate or predict future behavior, as assessed by tests, quizzes, homework, or projects.
* use a graphing calculator to sketch, translate, and interpret graphs of linear, polynomial, rational, absolute value, *n*th root, exponential, and logarithmic functions, as assessed by tests, quizzes, homework, or projects.
* incorporate a wide variety of manipulations to solve linear, polynomial, rational, absolute value, *n*th root, exponential, and logarithmic equations, as assessed by tests, quizzes, homework, or projects.
* use matrices to solve systems of equations, and perform operations with matrices, as assessed by tests, quizzes, homework, or projects.
* differentiate between essential and extraneous information, and implement his/her knowledge of the aforesaid skills to solve applied mathematics problems, as assessed by tests, quizzes, homework, or projects.

**General Education Student Learning Outcomes:**

Students will apply appropriate mathematical and statistical concepts and operations to interpret data and to solve problems.

**Course Outline:**

**Review Unit**

Polynomials**-( Eliminate Long and synthetic division- Do it in Unit II)**  
Rational Expressions  
Equations   
Inequalities   
Complex Numbers

**Unit I Graphs and Functions**

Graphs of Equations

Lines

Functions

A Library of Parent functions.

Transformations of Functions.

Combinations of Functions; Composite Functions

Inverse Functions

**Unit II Polynomial and Rational Functions**

Quadratic Functions.

Polynomial Functions.

Dividing Polynomials and the Rational Zeros Test**(-Include A2. Polynomials-( Long and**

**synthetic division)**

Zeros of Polynomial Functions

Rational Functions

Variation

**Unit III Exponential and Logarithmic Functions**

Exponential Functions.

Logarithmic Functions.

Rules of Logarithms

Exponential and Logarithmic Equations and Inequalities.

**Unit IV Systems of Equations and Inequalities and Matrices**

Systems of Linear Equations in Two Variables**(Review)**

Systems of Linear Equations in Three Variables

Matrices and Systems of Equations

Determinants and Cramer's Rule

Matrix Algebra  
The Matrix Inverse

Systems of Inequalities.

Partial-Fraction Decomposition

**Course Activities:**

The classroom activities will include formal and informal lectures where new material and assigned problems will be explained. Students will be encouraged to participate in discussion during the presentation and at times present problems on the blackboard. Time will be set aside to answer specific questions concerning homework problems and other previous material. The calculator will be an integral part of the class; a computer algebra system will be stressed whenever possible.

**Assessment of Student Learning Outcomes**: The student will be evaluated on the degree to which student learning outcomes are achieved.. In addition to a minimum of two tests, a variety of methods may be used such as class participation, projects, homework assignments, etc. (There must be some evidence that the learning outcomes have been achieved.) Student progress will be evaluated on the following basis:

1. Unit Tests

2. Periodic Quizzes, if you deem they are necessary to motivate students to study and attend

class on a regular basis.

3. Electronic Homework assignments, if graded.

4. Other graded homework or software projects.

5. Class attendance, if you have specified this at the beginning of the semester.

6. Comprehensive final examination (optional).

**Grading:**

Grades will be based on student's performance in the above designated areas. Percentages

will be assigned by each individual professor.

**A** 90 to 100

**B** 80 to 89

**C** 70 to 79

**D** 60 to 69

**F** Below 60

**I** Incomplete (only under extreme emergencies) Must be completed within one semester.

**NA** Not attending

**XA** Never Attended

**W** Withdraw (student must submit an official withdrawal form

by the deadline).

**Textbook:**

*Precalculus: A Unit Circle Approach,* Current Edition. Ratti- McWaters, Pearson.

**Supplemental Materials:** *Students Solutions Manual*

T1-83/84 Plus Graphing Calculator – recommended

Textbook specific course management system.