**Department Master Syllabus**

**Camden County College**

**Blackwood, NJ 08012**

**Course Title:** Precalculus Mathematics II

**Course Number:** MTH-124

**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 0

**Prerequisites:** **MTH-123** (Precalculus Mathematics I) **AND** **ENG-013** (Reading Skills III) **OR** proper placement exam scores.

**Course Description:** This course is acontinuation of Precalculus Mathematics I for science, technology, engineering and mathematics majors. In addition to trigonometry, other topics covered include conics, sequences, polar coordinates, parametric equations, vectors in plane, the dot product, and an introduction to limits. 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 geometric and trigonometric formulas and identities to draw out factual answers, 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 trigonometric, parametric, and polar functions, as assessed by tests, quizzes, homework, or projects.
* Utilize identities and substitutions to solve trigonometric, parametric, and polar equations, as assessed by tests, quizzes, homework, or projects.
* Transform equations of ellipses, hyperbolas, and parabolas to standard form, as assessed by tests, quizzes, homework, or projects.
* Recognize and classify numerical patterns as arithmetic or geometric sequences or series, as assessed by tests, quizzes, homework, or projects.
* Write the component forms of vectors, and write vectors as linear combinations of unit vectors, as assessed by tests, quizzes, homework, or projects.
* Find the dot product of two vectors, find the angle between two vectors, and determine whether two vectors are orthogonal, 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**

Rules of Logarithms

Exponential and Logarithmic Equations and Inequalities

**Unit I Trigonometry Functions**

Angles and Their Measure  
The Unit Circle; Trigonometric Functions of an Real Numbers  
Trigonometric Functions of Angles  
Graphs of the Sine and Cosine Functions  
Graphs of the other Trigonometric Functions  
Inverse Trigonometric Functions

**Unit II Analytic Trigonometry**

Trigonometric Identities and Equations  
Trigonometric Equations  
Sum and Difference Formulas  
Double-Angle and Half-Angle Formulas  
Product-to-Sum and Sum-to-Product Formulas

**Unit III Applications of Trigonometric Functions**

Right Triangle Trigonometry  
The Law of Sines  
The Law of Cosines  
Vectors  
The Dot Product

Polar Coordinates  
Polar Form of Complex Numbers; DeMoivre's Theorem **(Optional)**

**Unit IV Further Topics in Algebra**

Sequences and Series  
Arithmetic Sequences; Partial Sums  
Geometric Sequences and Series

**Unit V Analytic Geometry**

Conic Sections: Overview  
The Parabola  
The Ellipse  
The Hyperbola  
Parametric Equations

**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.