UNIVERSITY of NICOSIA

Course Code	Course Title	ECTS Credits
MATH-180	Algebra and Trigonometry	6
Department	**Semester**	**Prerequisites**
Computer Science	Fall, Spring	None
Type of Course	**Field**	**Language of Instruction**
Required/Elective	Mathematics	English
Level of Course	**Year of Study**	**Lecturer(s)**
1st Cycle	1st	Dr George Chailos
Mode of Delivery	**Work Placement**	**Co-requisites**
Face-to-face	N/A	None

Objectives of the Course:

The main objectives of the course are to:

- Introduce students to polynomials, rational expressions and nth roots.
- Provide students with the necessary knowledge for solving linear and quadratic equations.
- Introduce students to Complex numbers and provide them with the necessary techniques for solving quadratic equations in the Complex number domain.
- Develop the necessary skills in order for the students to be capable of solving polynomial and rational inequalities as well as inequalities involving absolute values.
- Cover the elementary theory of functions, their graphs and their properties.
- Discuss composition of functions and the elementary theory of inverse functions.
- Develop the theory of logarithmic and exponential functions, and discuss logarithmic and exponential equations.
- Discuss the basic concepts of Trigonometric functions, and make the students able to handle trigonometric expressions and graph sine, cosine and tangent functions.

Learning Outcomes:

After completion of the course students are expected to be able to:

1. Solve linear equations and quadratic equations in the complex domain.
2. Solve polynomial and rational inequalities as well as inequalities involving absolute values.
3. Apply the basic concepts of function theory
4. Sketch the graphs of elementary functions.
5. Compose functions, determine if a function is invertible and find inverses of 1-1 functions.
6. Utilize and handle logarithmic and exponential expressions and solve logarithmic and exponential equations.
7. Use basic trigonometric theory and graph elementary trigonometric functions.

Course Contents:

1. Polynomial and Rational expressions
2. Equations and inequalities
    - Linear and quadratic equations.
    - Introduction to Complex numbers.
    - Polynomial and rational inequalities.
    - Equations and inequalities involving absolute values
3. Functions and their graphs
    - Properties of functions.
    - Graph of functions.
    - Composite functions and one to one functions; invertibility of functions.
4. Exponential and Logarithmic functions
    - Basic properties of exponential and logarithmic functions and their graphs.
    - Logarithmic and exponential equations.
5. Trigonometric functions
    - Right angle trigonometry.
    - Trigonometric functions of general angles.
    - Graphs of elementary trigonometric functions.

Learning Activities and Teaching Methods:

Lectures, Exercises, Assignments and Tests.

Assessment Methods:

2 Mid-Term Exams; Final Exam; Class Participation.

Required Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
M. Sullivan	Algebra and Trigonometry	Prentice Hall	2008	0-132-32903-4

Recommended Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
Dugopolsk, Barnett, Bluman	Algebra for College students with Trigonometry and Statistics	Mc Graw Hill	2006	0-072-93482-4