

Course Title	Mathematics				
Course Code	ETECH 150				
Course Type	Compulsory				
Level	First Cycle				
Year / Semester	First Year / Fall				
Teacher's Name	Maria Charalambous				
ECTS	6	Lectures / week	3	Laboratories / week	0
Course Purpose and Objectives	<p>The main objectives of the course are to:</p> <ul style="list-style-type: none">• Introduce students to the fundamental principles of algebra, geometry, trigonometry, and graphing techniques• Introduce students to methods and techniques used for the solution of algebraic equations that involve logarithms and exponential functions• Provide knowledge and skills for calculation of length, area, and volume of different shapes and objects• Provide knowledge and understanding of trigonometric functions and their use in calculating distances and angles• Provide skills on graphing functions using different types of scales				
Learning Outcomes	<p>After completion of the course students are expected to:</p> <ul style="list-style-type: none">• Solve algebraic equations that involve powers, logarithms, and exponential functions• Calculate the length, area, and volume of basic canonical shapes and objects using geometry rules and theorems• Use trigonometric theorems and techniques to calculate angles, projections, etc• Draw functions on rectangular axes using different types of scales				
Prerequisites	None		Required	None	
Course Content	<ul style="list-style-type: none">• Algebra<ul style="list-style-type: none">○ Fractions, ratios & proportions, percentages○ Errors and approximations, use of calculator, evaluation of formulas○ Basic algebraic equations, laws, factorization, brackets, polynomials○ Simple equations, solution of system of equations○ Quadratic equations○ Logarithms and laws of logarithms○ Exponential functions• Geometry<ul style="list-style-type: none">○ Areas of planar shapes (triangles, rectangles, quadrilaterals, etc)○ Circle and its properties				

	<ul style="list-style-type: none"> ○ Arc length and area of sector ○ Volumes and surface areas of regular solids (sphere, cone, pyramid, prism, cube, etc) ○ Areas and volumes of irregular shapes • Trigonometry <ul style="list-style-type: none"> ○ Introduction of trigonometry ○ Pythagorean theorem ○ Trigonometric ratios and acute angles ○ Right-angle triangles ○ Evaluation of trigonometric ratios ○ Graphs of trigonometric functions ○ Sine and cosine functions and curves ○ Generic sinusoidal form ○ Sinusoidal harmonics ○ Sine and cosine rule ○ Problems with triangles and their areas ○ Trigonometric identities • Graphs <ul style="list-style-type: none"> ○ Introduction to graphs ○ Straight line graphs ○ Logarithmic scales ○ Periodic functions ○ Odd and even functions ○ Continuous and discontinuous functions
Teaching Methodology	Lectures, in-class examples, exercises, practical.
Bibliography	<u>Compulsory</u> <ul style="list-style-type: none"> • John Bird (2010), Engineering Mathematics, Nwenes, 6th Edition, ISBN:978-0080965628 • Lecturers notes.
Assessment	Homework: 10% Participation: 10% Laboratory: 20% Mid Term: 20% Final Exam: 40%
Language	Greek