University of Asia Pacific

Department of Basic Sciences & Humanities

Courses Title: Mathematics II **Course Code: MTH 103 (CE)**

Course Outline:

Solid Geometry: The Equations of Plane and Straight Line, Sphere, Conicoids, Elementary Properties, Transformation of Axes. Vector Space, Vector in Three Dimensions.

Vector Analysis: Scalars and Vectors, Equality of Vectors, Addition and subtraction of Vectors. Multiplication of Vectors by Scalars, Position Vector of a Point, Resolution of Vectors. Scalar and Vector Product of two Vectors and their Geometrical Interpretation. Triple Products and Multiple Products. Application to Geometry and Mechanics, Linear Dependence and Independence of Vectors, Differentiation and Integration of Vectors together with Elementary Applications, Definition of Line, Surface and Volume Integral. Gradient, Divergence and Curl of Point Functions. Various Formulae. Gauss's Theorem, Stoke's Theorem, Green's Theorem and their Applications.

University of Asia Pacific

Department of Basic Sciences & Humanities

Courses Title: Mathematics II **Course Code: MTH 103 (EEE)**

Course Outline:

Ordinary Differential Equations: degree and order of ordinary differential equations, Formation of differential equations. Solutions of first order differential equations by various methods. Solution of general linear equations of second and higher orders with constant coefficients. Solution of homogeneous linear equations. Solution of differential equations of the higher order when the dependent or independent variables are absent. Solution of differential equation by the method based on the factorization of the operators. Frobenius method. Bessel's and Legendre's differential equations.

Matrices: definition, equality, addition, subtraction , multiplication, transposition, inversion, rank. Vector Spaces and linear transformations. Eigenvalues and eigenvectors.