Department of Mathematics   **Faculty of Science**

MATH 461 (206461)   **MATHEMATICS FOR PHYSICAL**   **2(2/2-0/0)**

                         SCIENCE STUDENTS I

Abbreviation   **MATH FOR PHYS SCI STD I**

Prerequisite   MATH 203 (206203) or consent of the instructor

Recommended   For graduate student in geology and teaching physics only

Course Description

      Matrices and systems of linear equations. Vector analysis, line and surface integrals, gradients, divergence, curl, Stokes and Gauss theorems. Differential equations : linear differential equations with constant coefficients. Power series solution. The numerical solution of differential equations.

Course Contents   **No. of Lecture Hours**

1. Linear algebraic equations, determinants and matrices   10

   - Determinants and their properties

   - Evaluation of determinants

   - Matrices and their properties

   - Eigenvalues and eigenvectors

   - Reduction of matrix to diagonal form

   - Linear equations

2. Vector analysis   8

   - Space curves and surfaces

   - Line integrals

   - Surface integrals

   - Volume integrals

   - Gauss' theorem

   - Stokes' theorem

3. Linear differential equations with constant coefficients   12

   - Homogeneous linear differential equations and their solutions

   - Nonhomogeneous linear differential equations and their solutions

   - Solution in series

   - The numerical solutions of ordinary differential equations

                                                    Total   **45**