Department of Mathematics **Faculty of Science**

MATH 462 (206462)	**MATHEMATICS FOR PHYSICAL SCIENCE STUDENTS II**	**2(2/2-0/0)**
Abbreviation	**MATH FOR PHYS SCI STD II**	
Prerequisite	MATH 461 (206461)	
Recommended	For graduate student in geology and teaching physics only	

Course Description

Laplace transforms. Legendre's equation. Bessel's equation. Fourier series. Eigenvalue and boundary valued problems. System of linear differential equations. Function of complex variable : complex numbers, analytic functions. Cauchy-Riemann equations. Complex integration. Cauchy's integral formula.

Course Contents	**No. of Lecture Hours**
1. Functions of a complex variable	12
- Complex numbers. Functions of a complex variable	
- Cauchy's integral theorem	
- Calculus of residues and Cauchy's residue theorem	
- Evaluation of definite integral by contour integration	
2. Laplace transformation	8
- Definition of Laplace transformation and some properties	
- Inverse Laplace transformation and Fourier Mellin theorem	
- Impulsive and periodic functions	
- Solution of differential equation by Laplace transformation	
3. Fourier series	6
- Orthogonal functions. Fourier series and Euler's formulas	
- Extension of the interval. Complex form of Fourier series	
4. Legendre and Bessel equations	4
- Legendre equation and Legendre polynomials	
- Bessel equation and Bessel Functions	
Total	**45**