Department of Mathematics **Faculty of Science**

MATH 733 (206733) **COMPLEX ANALYSIS** **3(3-0-6)**

Prerequisite Consent of the instructor

Course Descriptions :

Preliminary properties of analytic functions. The residue theorem. The Riemann Mapping theorem. Analytic continuation.

Course Contents	**No. of Lecture Hours**
1. Preliminary properties of analytic functions	9
- Function of complex variable	
- Complex differentiation and integration	
- Cauchy's therem, Cauchy's integral formula, Taylor's series	
- Cauchy's inequality. Liouville's theorem	
- The zeros of an analytic function	
- Laurent series. Singularities	
2. Residue theorem	10
- Residue Contour integration	
- Integral functions	
- Poisson's integral. Jensen theorem	
3. Analytic continuation	10
- General theory	
- Singularities	
- Function with natural boundaries	
- The circle of convergence	
- Convergence of series and regularity of the function	
- Gap theorem	
4. Conformal representation	8
- General theory	
- Linear theory	
- Univarent function	
5. Some other topics	6
- The maximum-modulus theorem	
- Scharz's Lemma	
- Hadamard's three-circles theorem	
- The Borel-Caratheodory inequality	