# 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