

**Syllabus**  
**Mid Exam 2024-2025**  
**Complex Variables and Partial Differential Equations (3140610)**

**Semester: IV**

**Branch: Civil**

**Complex Numbers and Analytic Functions:**

- *Polar Form of Complex Numbers,*
- *Powers and Roots,*
- *Complex Variable – Differentiation : Differentiation,*
- *Cauchy-Riemann equations, analytic functions, harmonic functions, finding harmonic conjugate*
- *Elementary analytic functions (exponential, trigonometric, logarithm) and their properties*
- *Conformal mappings,*
- *Mobius transformations and their properties.*

**Complex Variable Integration & Power Series:**

- *Liouville's theorem and Maximum-Modulus theorem.*
- *Sequences, Series, Convergence Tests, Power Series, Functions Given by Power Series, Taylor and Maclaurin Series, Laurent Series.*

**Partial differential equations:**

- *First order partial differential equations,*
- *Solutions of first order linear and nonlinear PDEs, Charpit's Method.*