

## Integration Workshop 2004

### Complex Analysis Lectures Outline:

#### Lecture 1:

- Line Integrals & Green's theorem
- Analytic functions and examples
- Harmonic functions
- Cauchy-Riemann equations
- Cauchy's Theorem
- Cauchy's Formula
- Maximum modulus Principle

#### Lecture 2:

- Singularities of analytic functions
- The Residue Theorem
- Applications to improper integrals
- Linear Fractional transformations
- Conformal mappings

#### Lecture 3:

- Power series, Taylor series, Laurent series
- A closer look at harmonic functions
- The Dirichlet Problem