Module Code: MATH-416
Module Title: **Measure Theory and Lebesgue Integration**
Module Rating: 3 Cr. Hours

Measurable Sets
- Outer measure, Lebesgue measure
- Lebesgue measurable sets
- Borel sets
- Non measurable sets

Measurable Functions
- Lebesgue measurable functions
- Simple functions, characteristic functions
- Borel measurable function
- Littlewood three principle

The Lebsegue Integration
- Review of the Riemann integral
- Lebsegue integral
- Integral of a non negative function
- Integral of measurable functions
- Convergence in measure

Recommended Books
1 D. Smith, M. Eggen and R. St. Andre, *A Transition to Advanced   Mathematics*, (Brooks, 2001)
2 Seymour Lipshcutz, *Set Theory and Related Topics,* (Mc-Graw Hill Book Company, 1999)
3 H. L. Royden, *Real Analysis*, (Macmillam, 1968)
4 D. L. Cohan, *Measure Theory*, (Bir Khauser, 1980)
5 P.R. Halmos, *Measure Theory*, (Von Nostrand, New York, 1950)