

RC-17

W.e f 2003-2004 AB

## Syllabus

M 202 - Real Analysis II SX-5211

UNIT I : Lebesgue measure: Introduction, Outer measure, measurable sets and Lebesgue measure, A non measurable set, measurable functions, Littlewoods three principles.

Chapter 3 of the textbook.

UNIT II : The Lebesgue Integral: The Riemann integral, The Lebesgue integral of a bounded function over a set of finite measure, the integral of a nonnegative function, the general Lebesgue integral, convergences in measure.

Chapter 4 of the textbook.

UNIT III : Differentiation and integration: Differentiation of monotone functions, functions of bounded variation, and differentiation of an integral, Absolute continuity, and convex functions.

Chapter 5 of the textbook.

UNIT IV : The classical Banach spaces: The  $L^p$ -spaces, The holders and Minkowski inequality, convergences and completeness, approximations in  $L^p$ , Linear functionals on  $L^p$  spaces.

Chapter 6 of the textbook.

### Textbook :

Real analysis by H.L. Royden, Macmillan Publishing Co. Inc. 3rd Edition, 1988.