Course Outline for M 384: Real Analysis II

Semester II: 1425-1426

[Note: I taught this course at the Women section, Department of Mathematics, College of Science, King Saud University]

Reference Books:

1) Introduction to Real Analysis by R. G. Bartle and D. R. Sherbert, 3rd Edition, 2000, John Wiley & Sons, Inc, New York
2) H. L. Royden, Real Analysis, 3rd Edition, Macmillan, New York, 1988
3) W. Rudin, Principles of Mathematical Analysis, McGraw-Hill, New York, 1976
4) **Elements of Real Analysis by M. A. Al-Gwaiz and S. A. Elsanousi, Chapman & Hall/CRC, Florida, 2006(An earlier version of this book on Real Analysis was taught)

Course Material Discussed:

1. Riemann Integral: Definition, Darboux's theorem, Riemann sums, fundamental theorem.
2. Uniform convergence of sequences and series of functions, power series.
3. Lebesgue Measure: Borel σ-algebra, outer measure, Lebesgue measurable sets, Lebesgue measure and its properties.
4. Lebesgue Integration: simple functions, measurable functions.
5. Monotone convergence theorem, dominated convergence theorem, and relation between Lebesgue and Riemann integral.