CORE (Mathematics) COURSE 11: MTH3211 Real Analysis-II (BscBEd-Semester 6)

Course Code	Course Name	L-T-P	Credits
MTH3211	Real Analysis II	3-1-0	4

Module 1: Topology of Metric Spaces

Finite, countable and uncountable sets. Metric space – definition and examples, open and closed sets, interior points, limit points, bounded sets, connected sets, compact sets.

Module 2: Continuity and Differentiability

Continuity, uniform continuity, Lebesgue number, properties of continuous functions, discontinuities, monotonic functions on **R**. Differentiability, mean value theorems, L' Hospital rule, Taylor's theorem.

Module 3: Sequences and Series of Real functions

Sequences and series of functions, Uniform convergence, Uniform convergence and Continuity, Uniform convergence and integration, Uniform convergence and Differentiation.

Module 4: Riemann-Stieltje Integration

The Riemann-Stieltje's integral, criterion for integrability. Properties of the integral, classes of integrable functions. The integral as the limit of a sum. First and second mean value theorems. Integration and differentiation.

Suggested Reading:

1.   Kumar & Kumaresan (2014). Real Analysis. CRC Press.

2.   Tao (2006). Analysis I. Hindustan Book Agency.

3.   Tao (2006). Analysis II. Hindustan Book Agency.

4.   Apostal (2002). Mathematical Analysis. Narosa.

5.   Rudin (2017). Principles of Mathematical Analysis. TMH.

6.   Kumaresan (2011). Topology of Metric Spaces. Narosa.