

Lesson Plan (2018-2019)
B. Sc. (Hons) Mathematics (Semester I).
C-3 Real Analysis

Teacher: Mr. Sweeti Yadav

Workload : 5 lectures per week

| | | |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| References: | 1. R. G. Bartle and D. R. Sherbert, Introduction to Real Analysis(3rd Edition), JohnWiley and Sons(Asia) Pvt. Ltd., Singapore, 2002. | |
| | 2. Gerald G. Bilodeau, Paul R. Thie, G.E.Keough, <i>An Introduction to Analysis</i> , Jones & Bartlett, Second Edition, 2010. | |
| | 3. Brian S. Thomason, Andrew. M. Bruckner, and Judith B. Bruckner, Elementary Real Analysis, Prentice Hall, 2001. | |
| Unit | Week | Topics Covered |
| 1 | Week-1 July 23-27, 2018 | Algebraic and Order properties of \mathbb{R} , d -neighborhood of a point in \mathbb{R} . |
| | Week-2 July 30 - August 3, 2018 | Idea of countable Sets, uncountable sets and uncountability of \mathbb{R} . |
| 2 | Week-3 August 6-10, 2018 | Bounded above sets, Bounded below sets, Bounded Sets, Unbounded sets, Suprema and Infima. |
| | Week-4 August 13-17, 2018 | The completeness property of \mathbb{R} , The Archimedean property, Density of rational and irrational numbers in \mathbb{R} . |
| | Week-5 August 20-24, 2018 | Intervals, Doubt Class, Test and Assignment. |
| 3 | Week-6 August 27-31, 2018 | Limit Points of a set, Isolated Points, Illustrations of Bolzano-Weierstrass theorem for sets. |
| 4 | Week-7 September 3-7, 2018 | Sequences, Bounded sequence, Convergent sequence. |
| | Week-8 September 10-14, 2018 | Limit of a sequence, Limit theorems. |
| | Week-9 September 17-21, 2018 | Monotone sequences, Monotone convergence Theorems. |
| | Week-10 September 24-28, 2018 | Subsequences, Divergent Criteria, Monotone subsequence Theorem(statement only). |
| | Week-11 October 1-5, 2018 | Bolzano Weierstrass theorem for Sequences, Cauchy sequence, Cauchy Convergence Criterion. |
| 5 | Week-12 October 8-12, 2018 | Infinite Series, Convergence and divergence of infinite series, Cauchy criterion. |
| | Week-13 October 22-26, 2018 | Comparison test, Limit Comparison test, Test and Assignment. |
| | Week-14 October 29 - November 2, 2018 | Ratio test, Cauchy's n th root test, Integral test. |
| | Week-15 November 5-9, 2018 | Alternating Series, Leibnitz test, Absolute Convergence. |
| | Week-16 November 12-16, 2018 | Conditional Convergence, Doubt Class, Test(if required) and Assignments submission. |