**Lesson Plan**

**Jan 2024 to April 2024**

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| **Name of Assistant Professor** | | **Dr.Jyoti** |
| **Class and Semester** | | **B.A/B.Sc. (Semester – 4)** |
| **Subject** | | **Mathematics** |
| **Paper** | | **Sequences and Series.** |
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| **January** | | |
| Week – 1  Week 2  Week 3  Week 4  Week 5 | Boundedness of the set of real numbers;  least upper bound, greatest lower bound of a set,  Neighborhoods, interior points,  isolated points  limit points, open sets, closed set,  interior of a set    Doubts on previous topics. | |
| **February** | | |
| Week - 1 | Closure of a set in real numbers and their properties. Bolzano-Weiestrass theorem. | |
| Week – 2 | Open covers, Compact sets and Heine-Borel Theorem | |
| Week – 3 | Sequence: Real Sequences and their convergence, Theorem on limits of sequence,  Bounded and monotonic sequences, Cauchy’s sequence, Cauchy general principle of | |
| Week – 4 | convergence, Subsequences, Subsequential limits.  Infinite series: Convergence and divergence of Infinite Series, Comparison Tests of  positive terms Infinite series, Cauchy’s general principle of Convergence of series, | |
| **March** | | |
| Week – 1 | Convergence and divergence of geometric series, Hyper Harmonic series or p-series. | |
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| Week – 2 | Infinite series: D-Alembert’s ratio test, Raabe’s test, Logarithmic test, de Morgan and  Bertrand’s test. | |
| Week – 3 | Cauchy’s Nth root test, Gauss Test, Cauchy’sintegral test Cauchy’s condensation test. | |
| **April** | | |
| Week - 1 | Alternating series, Leibnitz’s test, absolute and conditional convergence | |
| Week – 2 | Arbitrary series: Abel’s lemma, Abel’s test, Dirichlet’s test, Insertion and removal of parenthesis, re- arrangement of terms in a series, Dirichlet’s theorem, | |
| Week – 3 | Riemann’s Re-arrangement theorem, Pringsheim’s theorem (statement only), Multiplication of series, | |
| Week – 4 | Cauchy product of series, (definitions and examples only) Convergence and absolute  convergence of infinite products. | |