**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 – 1Week 2Week 3Week 4Week 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 ofpositive 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 andBertrand’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 absoluteconvergence of infinite products. |