**Curriculum Plan: B. Sc. (Hons) Mathematics (Semester V)- METRIC SPACES (2025-26). ODD SEM**

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| **DR. ABHISHEK KR. SINGH**  Assistant Professor  Department of Mathematics  Kalindi College  University of Delhi  Delhi- 110008  Mobile: +91-8375834510  **Email**: abhishek@kalindi.du.ac.in | | C:\Users\Abhishek\Pictures\2014-05-28 002\photo.jpg | **Marks Distribution** | **Theory** - |
| **Internal Assessment-** |
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| **Classes Assigned** | **Lectures: 3 per week** |
|  | **References** | **Shirali, Satish & Vasudeva, H. L. (2009). Metric Spaces. Springer. Indian Reprint 2019.** | | |
|  | **Week** | **Topics** | | |
|  | **1st week** | Definition, examples, sequences, and Cauchy sequences, | | |
| **2nd week** | Complete metric space; Open and closed balls, | | |
| **3rd week** | Neighborhood, Open set, Interior of a set, Limit point of a set, | | |
| **4th week** | Derived set, | | |
| **5th week** | Closed set, Closure of a set, Diameter of a set, Cantor's theorem, Subspaces | | |
| **6th week** | Continuous mappings, Sequential criterion and other characterizations of continuity, | | |
| **7th week** | Uniform continuity; Homeomorphism, Isometry and equivalent metrics, | | |
| **8th week** | Contraction mapping, Banach fixed point theorem. | | |
| **9th week** | Connectedness, Connected subsets of ℝ, | | |
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|  | **10th week**. | Connectedness and continuous mappings, | | |
| **11th week** | Compactness and boundedness, | | |
|  | **12th week** | Characterizations of compactness, | | |
| **13th week** | Continuous functions on compact spaces | | |
| **14th week** | REVISION. | | |
| **15th week** | REVISION. | | |
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