**Curriculum Plan : B.Sc. Physical Sciences I Year (I Sem)**

**Topics in Calculus**

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| **Ms. Garima Gaur**Assistant ProfessorDepartment of MathematicsKalindi College (University of Delhi)Delhi- 110008Mobile: 9953227989E- mail: garimagaur@kalindi.du.ac.in |  | **Marks Distribution**  | **Theory** |  90 Marks |
| **Internal Assessment** |  30 Marks |
| **Continuous Assessment** | 40 Marks |
| **Classes Assigned** | **Theory** | 3 lectures per week |
|  | **References** | 1. **Prasad, Gorakh (2016). Differential Calculus (19th ed.). Pothishala Pvt. Ltd. Allahabad.**
2. **Prasad, Gorakh (2015). Integral Calculus. Pothishala Pvt. Ltd. Allahabad.**
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|  | **Week** | **Topics** |  |
|  | **1st week** | Limit of a function, definition of a limit, Infinite limits. |  |
| **2nd week** | Continuity and types of discontinuities |
|  | **3rd week** | Differentiability of a function, Successive differentiation. |  |
| **4th week** | Calculation of the nth derivatives, Leibnitz theorem. |  |
| **5th week** | Partial differentiation, Euler’s theorem on homogeneous functions. |  |
|  | **6th week** | Rolle’s theorem, Mean value theorems. |  |
|  | **7th week** | Applications to monotonic functions and inequalities. |  |
|  | **8th week** | Taylor’s theorem with Lagrange’s and Cauchy’s form of remainders, Definition and examples of convergent sequences and series. |  |
|  | **9th week** | Taylor’s, Maclaurin’s series expansions of , sinx , cosx , log(1+x), e^x, and (1+x)^m. |  |
|  | **10th week** | Indeterminate forms. |  |
|  | **11th week** | Asymptotes (parallel to axes and oblique). |  |
|  |  | **SEMESTER BREAK** |  |
|  | **12th week** | Concavity and inflexion points, Singular points (cusp, node and conjugate). |  |
|  | **13th week** | Tangents at the origin and nature of singular points, Curve tracing (cartesian and polar equations). |  |
|  | **14th week** | Reduction formulae  |  |
|  | **15th week** | Application of Reduction Formulae. |  |