**Curriculum Plan: B.Sc. Physical Science, I Year (Semester II)**

**Calculus & Geometry**

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| **Ms. Garima Gaur**Assistant ProfessorDepartment of MathematicsKalindi College (University of Delhi)Delhi- 110008Mobile: 9953227989**E- mail**: garimagaur@kalindi.du.ac.in |  | **Marks Distribution**  | **Theory** |  75 Marks |
| **Internal Assessment** |  25 Marks |
| **Classes Assigned** | **Lectures** |  5 per week |
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| **Practical** |  |
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| **References** |  | **1. Anton, Howard, Bivens, Irl, & Davis, Stephen (2013). Calculus (10th ed.). John Wiley & Sons Singapore Pvt. Ltd. Reprint (2016) by Wiley India Pvt. Ltd. Delhi.** **2. Strauss, M. J., Bradley, G. L., & Smith, K. J. (2007). Calculus (3rd ed.). Dorling Kindersley (India) Pvt. Ltd. (Pearson Education). Delhi. Sixth impression 2011.** |
|  | **Week** | **Topics** |  |
|  | **Beginning day /1st week**April 7- 14, 2022 | The first derivative test for relative extrema, Concavity and inflection points. |  |
| **2nd week**April 15-21, 2022 | Second derivative test for relative extrema, Curve sketching using first and second derivative tests. |
|  | **3rd week**April 22-28, 2022 |  Limits to infinity and infinite limits, Graphs with asymptotes. |  |
| **4th week**April 29-May 5, 2022 | Vertical tangents and cusps, L'Hôpital's rule. |  |
| **5th week**May 6-12, 2022 | Parametric representation of curves and tracing of parametric curves (except lines in ℝ). |  |
|  | **6th week**May 13-19, 2022 | Polar coordinates and the relationship between Cartesian and polar coordinates. |  |
|  | **7th week**May 20-26, 2022 | Tracing of curves in polar coordinates. |  |
|  | **8th week**May 21-26,2022 | Volumes by slicing disks and method of washers. Volumes by cylindrical shells, |  |
|  | **9th week**May 27- June 2, 2022 | Arc length, Arc length of parametric curves. |  |
|  | **10th week**June 3-9, 2022 | Area of surface of revolution. |  |
|  | **11th week**June 10- 16, 2022 | Reduction formulae, and to obtain the iterative formulae for some particular integrals. |  |
|  | **12th week**June 17-23, 2022 | Techniques of sketching conics: parabola, ellipse and hyperbola. |  |
|  | **13th week**June 24-30, 2022 | Reflection properties of conics, Rotation of axes, second degree equations and their classification into conics using the discriminant. |  |
|  | **14th week** July 1-7, 2022 | Vector-valued functions, Differentiation of vector-valued functions, gradients, divergence, curl and their geometrical interpretation. |  |
|  | **15th week**June 8-14, 2022 | Spheres, Cylindrical surfaces. Illustrations of graphing standard quadric surfaces like cone, ellipsoid. |  |
|  | **16th week** July 15-25 , 2022 | Spheres, Cylindrical surfaces. Illustrations of graphing standard quadric surfaces like cone, ellipsoid. |  |