Lesson Plan (Odd semester)
(July 2018 to Nov 2018)
B. Sc. (Hons) Mathematics (Semester I).
Subject: C-1 Calculus

Teacher: Mr. Basant Kumar Mishra

References:	1. M. J. Strauss, G. L. Bradley and K. J. Smith, Calculus (3rd Edition), Dorling Kindersley (India) Pvt. Ltd. (Pearson Education), Delhi, 2007.
	2. H. Anton, I. Bivens and S. Davis, Calculus (7th Edition), John Wiley and sons (Asia), Pt Ltd., Singapore, 2002.
	3.Thomas, Jr. George B., Weir, Maurice D., & Hass, Joel (2014). Thomas' Calculus (13th ed.). Pearson Education, Delhi. Indian Reprint 2017.

Unit	Week	Topics Covered
1	**Week-1** July 23-27, 2018	Hyperbolic functions, Higher order derivatives, Applications of Leibnitz rule.
	Week-2 July 30 - August 3, 2018	The first-derivative test for relative extrema, Concavity and inflection points, Secondderivative test for relative extrema, Curve sketching using first and second derivative tests.
	Week-3 August 6-10, 2018	Limits to infinity and infinite limits, Graphs with asymptotes, Vertical tangents and cusps, L'Hôpital's rule.
	Week-4 August 13-17, 2018	Applications of derivatives in business, economics and life sciences.
2	**Week-5** August 20-24, 2018	Parametric representation of curves and tracing of parametric curves (except lines in $\mathbb{R}3$),
	Week-6 August 27-31, 2018	Higher order derivatives and Leibniz rule for higher order derivatives for the product of two functions.Tests & assignment for unit 1 & part of Unit 2
	Week-7 September 3-7, 2018	Discussion on Polar coordinates and the relationship between Cartesian and polar coordinates
	Week-8 September 10-14, 2018	Tracing of curves in polar coordinates. Techniques of sketching conics: parabola, ellipse and hyperbola.
	Week-9 September 17-21, 2018	Reflection properties of conics, Rotation of axes, Second degree equations and their classification into conics using the discriminant.
3	**Week-10** September 24-28, 2018	Volumes by slicing disks and method of washers, Volumes by cylindrical shells,
	Week-11 October 1-5, 2018	Determination of Arc length, Arc length of parametric curves.
	Week-12 October 8-12, 2018	Area of surface of revolution & Reduction formulae. Test and Assignment for Unit 2 & 3

4	**Week-13** October 22-26, 2018	Introduction to vector functions and their graphs, Operations with vector functions, Limits and continuity of vector functions, Differentiation and tangent vectors.
	Week-14 October 29 - November 2, 2018	Properties of vector derivatives and integration of vector functions; Modeling ballistics and planetary motion, Kepler's second law.
	Week-15 November 5-9, 2018	Unit tangent, Normal and binormal vectors, Curvature
	Week-16 November 12-16, 2018	Conditional Convergence, Doubt Class, Test(if required) and Assingments sumbission.