

I – Academic Planner

Teaching Plan (Year : 2021 -22 Semester: odd)

Teacher's Name : Dr. Sumit Kumar Sharma Department: Mathematics

Sl. No .	UPC	Paper Name	Core/ AECC/ GE/ SEC	Topic/Unit	Start Date	End Date
1	32351101	Calculus	Core	The first-derivative test for relative extrema, Concavity and inflection points, Second derivative test for relative extrema, Curve sketching using first and second derivative tests.	22/11/2021	28/11/2021
2	32351101	Calculus	Core	Limits to infinity and infinite limits, Graphs with asymptotes, Vertical tangents and cusps, L'Hôpital's rule.	29/11/2021	06/12/2021
3	32351101	Calculus	Core	Applications of derivatives in business, economics and life sciences. Higher order derivatives and Leibniz rule for higher order derivatives for the product of two functions.	07/12/2021	13/12/2021

4	32351101	Calculus	Core	Parametric representation of curves and tracing of parametric curves (except lines in \mathbb{R}^3), Polar coordinates and the relationship between Cartesian and polar coordinates.	14/12/2021	20/12/2021
5	32351101	Calculus	Core	Tracing of curves in polar coordinates.	21/12/2021	27/12/2021
6	32351101	Calculus	Core	Techniques of sketching conics: parabola, ellipse and hyperbola.	28/12/2021	04/01/2021
7	32351101	Calculus	Core	Reflection properties of conics, Rotation of axes, Second degree equations and their classification into conics using the discriminant.	05/01/2021	12/01/2021
8	32351101	Calculus	Core	Volumes by slicing disks and method of washers	13/01/2021	18/01/2021
9	32351101	Calculus	Core	Volumes by cylindrical shells, Arc length, Arc length of parametric curves.	19/01/2021	26/01/2021
10	32351101	Calculus	Core	Area of surface of revolution; Hyperbolic functions.	27/01/2021	10/02/2021
11	32351101	Calculus	Core	Reduction formulae, and to obtain the iterative formulae for the integrals	11/02/2021	12/02/2021
12	32351101	Calculus	Core	Introduction to vector functions and their graphs, Operations with vector functions, Limits and continuity of vector functions, Differentiation and tangent vectors.	13/02/2021	24/02/2021
13	32351101	Calculus	Core	Properties of vector derivatives and integration of vector functions; Modeling ballistics and	25/02/2021	05/03/2021

Sl. No	UPC	Paper Name	Core/AECC/GE/SEC	Topic/Unit	Start Date	End Date
1	32351101	Calculus (Practical)	Core	Plotting the graphs of the given functions	22/11/2021	28/11/2021
2	32351101	Calculus (Practical)	Core	Observe and discuss the effect of changes in the real constants a , b and c on the graphs.	29/11/2021	30/11/2021
3	32351101	Calculus (Practical)	Core	Plotting the graphs of polynomial of degree 4 and 5, and their first and second derivatives, and analysis of these graphs	01/12/2021	07/12/2021
4	32351101	Calculus (Practical)	Core	Sketching parametric curves, e.g., trochoid, cycloid, epicycloid and hypocycloid	14/12/2021	21/12/2021
5	32351101	Calculus (Practical)	Core	Tracing of conics in Cartesian coordinates	22/12/2021	30/12/2021
6	32351101	Calculus (Practical)	Core	Continued: Tracing of conics in Cartesian coordinates	01/01/2021	08/01/2021
7	32351101	Calculus (Practical)	Core	Complex numbers and their representations, Operations like addition, multiplication, division, modulus. Graphical representation of polar form.	09/01/2021	16/01/2021

8	32351101	Calculus (Practical)	Core	Find numbers between two real numbers and plotting of finite and infinite subset of \mathbb{R} .	17/01/2021	24/01/2021
9	32351101	Calculus (Practical)	Core	Obtaining surface of revolution of curves.	25/01/2021	26/01/2021
10	32351101	Calculus (Practical)	Core	Graph of hyperbolic functions.	27/01/2021	05/02/2021
11	32351101	Calculus (Practical)	Core	Computation of limit, Differentiation, Integration and sketching of vector-valued Functions.	06/02/2021	07/02/2021
12	32351101	Calculus (Practical)	Core	Matrix operations: addition, multiplication, inverse, transpose; Determinant, Rank,	08/02/2021	15/02/2021
13	32351101	Calculus (Practical)	Core	Eigenvectors, Eigenvalues, Characteristic equation and verification of the Cayley-Hamilton theorem,	16/02/2021	24/02/2021
14	32351101	Calculus (Practical)	Core	Solving the systems of linear	26/02/2021	05/03/2021

2	32353301	LaTeX and HTML	SEC-1	Introduction to TeX and LaTeX, Typesetting a simple document, Adding basic information to a document, Environments, Footnotes, Sectioning and displayed material.	21/08/2021	21/09/2021
	32353301	LaTeX and HTML	SEC-1	Accents of symbols, Mathematical typesetting (elementary and advanced): Subscript/Superscript, Fractions, Roots, Ellipsis, Mathematical symbols, Arrays, Delimiters, Multiline formulas, Spacing and changing style in math mode. Graphics in LaTeX, Simple pictures using PSTricks, Plotting of functions.	22/09/2021	5/10/2021
	32353301	LaTeX and HTML	SEC-1	Beamer presentation, HTML basics, Creating simple web pages. Adding images and links, Design of web pages.	15/10/2021	12/11/2021

--	--	--	--	--	--	--

A. Outstation Field visits for students

Project Name / Paper Name			
Destination		Travel Mode	
Departure Month		Return	
Faculty-in-Charge		Number of Students going	

B. Internal Assessment: House Exam (Test/Presentation etc.) & Assignment*

Course Code	Course Name	Unique Paper Code	Topic Name	Day and Date	Date/s of Exhibiting the Assessment Sheet to students, Discussing the marks, Returning/Retaining
B.Sc. (Hons.) Mathematics		32351101	Calculus	24/02/2021	28/02/2021
B.Sc. (Hons.) Mathematics		32351101	Calculus (Practical)	29/02/2021	29/02/2021
B.Sc. (Hons.) Mathematics		32371208	Latex and HTML	23/04/2021	23/04/2021

*Marks of the Internal Assessment to be submitted to the College 15 days before the last working day of every semester

I – Academic Planner

A2: Teaching Plan (Year : 2021-22 Semester: Even)

Teacher's Name _ DR. Sumit Kumar Sharma Department: MATHEMATICS

S. No.	UPC	Paper Name	Core/ AECC /GE/SEC	Topic/Unit	Start Date	End Date
1	32357614	BSc (Hons) Mathematics Semester-VI Mathematical Finance	Core	Treasury Rates, LIBOR. LIBID, MIBOR, MIFOR, Rates of interest compounded continuously.	03-01-2022	10-02-2022
				Effective rate of interest and rate equivalence relation and questions on it,	11-02-2022	15-02-2022
				Bonds, Par yield of bond, Duration, modified duration and convexity of bond, Forward rate.	16-02-2022	25-02-2022
				Derivatives meaning, forwards, futures, types of participants in derivatives, European option, American option, long position and short position,	26-02-2022	05-03-2022

32357614	BSc (Hons) Mathematics Semester-VI Mathematical Finance	Core	introduction to options, LONG CALL AND SHORT CALL positions in options.	05-03-2022	13-03-2022
			Speculation and Hedging using futures/ forwards. Q1 to Q8 of exercise of chapter 1 done, Short selling, Forward price, Bounds on call and put options, factors affecting option price, Put call parity equation questions	14-03-2022	20-03-2022
			, Early exercise, Effect of dividends. Binomial option pricing model, Risk neutral valuation (for European and American options on assets following binomial tree model). Lognormal property of stock prices, Distribution of rate of return, expected return, Volatility, estimating volatility from historical data. Extension of risk neutral valuation to assets following GBM (without proof), Black-Scholes formula for European options	21-03-2022	05-04-2022
			Hedging parameters (the Greeks: Delta, Gamma, Theta, Rho and Vega) Trading strategies Involving options.	06-04-2022	15-04-2022
			Swaps, Mechanics of interest rate swaps, Comparative advantage argument, Valuation of interest rate swaps, Currency swaps, Valuation of currency swaps	16-04-2022	28-04-2022

1	32351401	Partial Differential Equations (Practicals only)	Core B.Sc. (H) Maths IV sem	Practical 1: Cauchy problem	03.01.2022	12.01.2022
2	32351401	Partial Differential Equations (Practicals only)	Core B.Sc. (H) Maths IV sem	Practical 2: Plotting of Characteristics curves	13.01.2022	26.01.2022
3	32351401	Partial Differential Equations (Practicals only)	Core B.Sc. (H) Maths IV sem	Practical 3: Integral surface	27.01.2022	28.01.2022
4	32351401	Partial Differential Equations (Practicals only)	Core B.Sc. (H) Maths IV sem	Practical 4.1: D' Alembert solution of wave eqn Practical 4.2 wave equation in finite string	29.01.2022	15.02.2022
5	32351401	Partial Differential Equations (Practicals only)	Core B.Sc. (H) Maths IV sem	Practical 5: Heat equation	16.02.2022	26.02.2022
6	32351401	Partial Differential Equations (Practicals only)	Core B.Sc. (H) Maths IV sem	Practical 6: system of ODE	27.02.2022	08.03.2022
7	32351401	Partial Differential Equations (Practicals only)	Core B.Sc. (H) Maths IV sem	Practical 7: Pointwise convergence	09.03.2022	10.03.2022
8	32351401	Partial Differential Equations (Practicals only)	Core B.Sc. (H) Maths IV sem	Practical 8: Uniform Convergence	11.03.2022	21.03.2022
9	32351401	Partial Differential Equations (Practicals only)	Core B.Sc. (H) Maths IV sem	Revision and doubts session	22.04.2022	28.04.2022

A. Outstation Field visits for students

Project Name / Paper Name			
Destination		Travel Mode	
Departure Month		Return	

Faculty-in-Charge		Number of Students going	
-------------------	--	--------------------------	--

B. Internal Assessment: House Exam (Test/Presentation etc.) & Assignment*

Course Code	Course Name	UPC	Topic Name	Day and Date	Date/s of Exhibiting the Assessment Sheet to students, Discussing the marks, Returning/Retaining
563	BSc (Hons) Mathematics Semester-VI	32357614	Mathematical Finance	20-04-2022	25-04-2022
563	BSc (Hons) Mathematics Semester-IV	32351401	Partial Differential Equations (Practicals only)	21-04-2022	

*Marks of the Internal Assessment to be submitted to the College 15 days before the last working day of every semester