

Academic Planner

A. Teaching Plan

Teacher's Name: **VISHAL DHAWAN**

Department: **MATHEMATICS**

Year: **2020-2021 (Odd Semester)**

Course: **B.Sc. (Hons.) Mathematics**

Paper Type: **Theory**

Semester: **V**

Sl. No	UPC	Paper Name	Core/AECC/GE/SEC	Topic/Unit	Start Date	End Date
1	32351303	Multivariate Calculus (Theory)	Core	Introduction to the Multivariate Calculus. Functions of several variables, Level Curves, Graphs of functions as cylindrical and non-cylindrical surfaces.	10/08/2020	15/08/2020
2	32351303	Multivariate Calculus (Theory)	Core	Limit and continuity of functions of two variables.	17/08/2020	22/08/2020
3	32351303	Multivariate Calculus (Theory)	Core	Partial differentiation, Tangent Planes and Normal Lines. Incremental Approximation. Total differentiability and differentiability.	24/08/2020	29/08/2020

4	32351303	Multivariate Calculus (Theory)	Core	rule for one and two independent parameters, directional derivatives, the gradient.	31/08/2020	05/09/2020
5	32351303	Multivariate Calculus (Theory)	Core	Maximal and normal property of the gradient, Tangent planes and Normal lines for general surfaces.	07/09/2020	12/09/2020
6	32351303	Multivariate Calculus (Theory)	Core	Extrema of functions of two variables: First derivatives test and second order partial derivative test. Absolute Extremum for continuous functions.	14/09/2020	19/09/2020
7	32351303	Multivariate Calculus (Theory)	Core	Method of Lagrange multipliers, constrained optimization problems.	21/09/2020	26/09/2020
8	32351303	Multivariate Calculus (Theory)	Core	Definition of vector field, divergence and curl. Double integration over rectangular regions, Double integration over nonrectangular regions.	28/09/2020	03/10/2020
9	32351303	Multivariate Calculus (Theory)	Core	Double integrals in polar co-ordinates, Triple integrals, Triple integral over a parallelepiped and solid regions. Volume by triple integrals.	05/10/2020	10/10/2020
10	32351303	Multivariate Calculus (Theory)	Core	Cylindrical and spherical polar co-ordinates.	12/10/2020	17/10/2020
11	32351303	Multivariate Calculus (Theory)	Core	Change of variables in double integrals and triple integrals.	19/10/2020	24/10/2020

12	32351303	Multivariate Calculus (Theory)	Core	Line integrals, Applications of line integrals: Mass and Work.	26/10/2020	31/10/2020
13	32351303	Multivariate Calculus (Theory)	Core	Fundamental theorem for line integrals, conservative vector fields.	02/11/2020	07/11/2020
14	32351303	Multivariate Calculus (Theory)	Core	Independence of path, Green's Theorem.	09/11/2020	14/11/2020
15	32351303	Multivariate Calculus (Theory)	Core	Surface integrals, integrals over parametrically defined surfaces.	16/11/2020	21/11/2020
16	32351303	Multivariate Calculus (Theory)	Core	Stokes' theorem, The Divergence theorem.	23/11/2020	28/11/2020

Year: 2020-2021 (Odd Semester)

Course: B.Sc. (Prog.) Physical Science

Paper Type: Theory

Semester: I

Sl. No	UPC	Paper Name	Core/AECC/GE/SEC	Topic/Unit	Start Date	End Date
1	42351101	Calculus and Matrices	Core	Graphs of simple basic functions such as: Polynomial, Trigonometric, Inverse trigonometric, Exponential and logarithmic functions.	18/11/2020	21/11/2020
2	42351101	Calculus and Matrices	Core	Limits and continuity of a function including $\epsilon - \delta$ approach.	23/11/2020	28/11/2020
3	42351101	Calculus and Matrices	Core	Properties of continuous functions including Intermediate value theorem.	30/11/2020	05/12/2020
4	42351101	Calculus and Matrices	Core	Differentiability, Successive differentiation, Leibnitz theorem,	07/12/2020	12/12/2020

				Recursion formulae for higher derivatives.		
5	42351101	Calculus and Matrices	Core	Rolle's theorem, Lagrange's mean value theorem with geometrical interpretations and simple applications. Taylor's theorem, Taylor's series and Maclaurin's series, Maclaurin's expansion of functions and their use in polynomial approximation and error estimation.	14/12/2020	19/12/2020
6	42351101	Calculus and Matrices	Core	Functions of two or more variables, Graphs and level curves of functions of two variables, Partial differentiation up to second order.	21/12/2020	26/12/2020
7	42351101	Calculus and Matrices	Core	Elementary row operations, Row reduction and echelon forms, Solution of systems of linear equations in matrix form.	28/12/2020	02/01/2021
8	42351101	Calculus and Matrices	Core	Linear independence and dependence. The rank of a matrix and applications.	04/01/2021	09/01/2021
9	42351101	Calculus and Matrices	Core	Elementary linear transformations like shear, translation, dilation, rotation, reflection, and their matrix form.	11/01/2020	16/01/2021
10	42351101	Calculus and Matrices	Core	The matrix of a general linear transformation.	18/01/2020	23/01/2021
11	42351101	Calculus and Matrices	Core	Eigenvectors & eigenvalues of square matrices up to order 3 and diagonalization.	25/01/2020	30/01/2021
12	42351101	Calculus and Matrices	Core	Geometrical representation of addition, subtraction, multiplication and division of complex numbers.	01/02/2020	06/02/2021

13	42351101	Calculus and Matrices	Core	Lines, Circles, Discs in terms of complex variables.	08/02/2020	13/02/2021
14	42351101	Calculus and Matrices	Core	Statement of the Fundamental theorem of algebra and its consequences.	15/02/2020	20/02/2021
15	42351101	Calculus and Matrices	Core	De Moivre's theorem and its application to solve simple equations in complex variables.	22/02/2020	27/02/2021
16	42351101	Calculus and Matrices	Core	Revision	01/03/2020	06/03/2021

Year: 2020-2021 (Odd Semester)

Course: B.Sc. (Hons.) Mathematics

Paper Type: Practical

Semester: III

Sl. No	UPC	Paper Name	Core/AECC/GE/SEC	Topic/Unit	Start Date	End Date
1	32351303	Multivariate Calculus (Practical)	Core	Draw the given surfaces and find their level curves at the given heights.	10/08/2020	15/08/2020
2	32351303	Multivariate Calculus (Practical)	Core	Previous practical continued: Some more functions to be considered	17/08/2020	22/08/2020
3	32351303	Multivariate Calculus (Practical)	Core	Draw the given surfaces and discuss whether limit for a function of two variables exists or not as approaches to the given point(s). Also find the limit, in case if it exists.	24/08/2020	29/08/2020
4	32351303	Multivariate Calculus (Practical)	Core	Limit and continuity of a function of one variable.	31/08/2020	05/09/2020

5	32351303	Multivariate Calculus (Practical)	Core	Limit of a function using $\varepsilon - \delta$ definition to visualize the existence of the limit of one variable function.	07/09/2020	12/09/2020
6	32351303	Multivariate Calculus (Practical)	Core	Limits at ∞ . Geometrical interpretation for the Rolle's Theorem.	14/09/2020	19/09/2020
7	32351303	Multivariate Calculus (Practical)	Core	Geometrical interpretation for the Lagrange's Mean Value Theorem.	21/09/2020	26/09/2020
8	32351303	Multivariate Calculus (Practical)	Core	Draw the tangent plane and the normal line to the given surfaces at the given point.	28/09/2020	03/10/2020
9	32351303	Multivariate Calculus (Practical)	Core	Continued: Draw the tangent plane and the normal line to the given surfaces at the given point.	05/10/2020	10/10/2020
10	32351303	Multivariate Calculus (Practical)	Core	Using incremental approximation to estimate the given functions at the given point and compare it with actual value.	12/10/2020	17/10/2020
11	32351303	Multivariate Calculus (Practical)	Core	Find critical points and identify relative maxima, relative minima or saddle points to the given surfaces, if it exists.	19/10/2020	24/10/2020
12	32351303	Multivariate Calculus (Practical)	Core	Continued: Find critical points and identify relative maxima, relative minima or saddle points to the given surfaces, if it exists.	26/10/2020	31/10/2020
13	32351303	Multivariate Calculus (Practical)	Core	Draw the given regions on 2D plane and check whether these regions are of Horizontally Simple or Vertically Simple.	02/11/2020	07/11/2020
14	32351303	Multivariate Calculus (Practical)	Core	Continued: Draw the given regions on 2D plane and check whether these regions are of Horizontally Simple or Vertically Simple.	09/11/2020	14/11/2020

15	32351303	Multivariate Calculus (Practical)	Core	Preparation for the Practical Examinations	16/11/2020	21/11/2020
16	32351303	Multivariate Calculus (Practical)	Core	Practical External Examination	23/11/2020	28/11/2020

Year: 2020-2021 (Odd Semester)

Course: B.Sc. (Hons.) Mathematics

Paper Type: Practical

Semester: I

Sl. No	UPC	Paper Name	Core/AECC/GE/SEC	Topic/Unit	Start Date	End Date
1	32351101	Calculus (Practical)	Core	Introduction to Mathematica	18/11/2020	21/11/2020
2	32351101	Calculus (Practical)	Core	Some Mathematica Commands	23/11/2020	28/11/2020
3	32351101	Calculus (Practical)	Core	Plotting the graph of some simple functions.	30/11/2020	05/12/2020
4	32351101	Calculus (Practical)	Core	Describing the options used in Plot command.	07/12/2020	12/12/2020
5	32351101	Calculus (Practical)	Core	Plotting of 2D-Graphs	14/12/2020	19/12/2020
6	32351101	Calculus (Practical)	Core	Simultaneous plot and Manipulation Command.	21/12/2020	26/12/2020
7	32351101	Calculus (Practical)	Core	Manipulation Continued.	28/12/2020	02/01/2021
8	32351101	Calculus (Practical)	Core	Plotting of polynomials.	04/01/2021	09/01/2021
9	32351101	Calculus (Practical)	Core	Continued: Plotting of Polynomials	11/01/2021	16/01/2021
10	32351101	Calculus (Practical)	Core	Contour Plot and options.	18/01/2021	23/01/2021
11	32351101	Calculus (Practical)	Core	Continued: Contour Plot and options.	25/01/2021	30/01/2021

12	32351101	Calculus (Practical)	Core	Polar Plot and options.	01/02/2020	06/02/2021
13	32351101	Calculus (Practical)	Core	Plotting of Standard Surfaces.	08/02/2020	13/02/2021
14	32351101	Calculus (Practical)	Core	Surface of revolution.	15/02/2020	20/02/2021
15	32351101	Calculus (Practical)	Core	Preparation for the Practical Examinations	22/02/2020	27/02/2021
16	32351101	Calculus (Practical)	Core	Practical External Examination	01/03/2020	06/03/2021

B. Outstation Field visits for students

N.A.

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

C. 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
563	B.Sc. (Hons.) Mathematics	32351301	Test: Multivariate Calculus	Friday 16/10/2020	03/11/2020

582	B.Sc. (Prog.) Physical Science	42351101	Test: Calculus and Matrices	Tuesday 16/02/2021	23/02/2021
563	B.Sc. (Hons.) Mathematics	32351301	Test: Multivariate Calculus (Practical)	Wednesday 14/10/2020	01/11/2020
563	B.Sc. (Hons.) Mathematics	32351301	Assignment: Multivariate Calculus	Monday 02/11/2020	18/11/2020
582	B.Sc. (Prog.) Physical Science	42351101	Assignment: Calculus and Matrices	Tuesday 02/03/2021	14/03/2021
563	B.Sc. (Hons.) Mathematics	32351301	Assignment: Multivariate Calculus (Practical)	Monday 02/11/2020	18/11/2020

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

D. Organization of Department/College Society Meetings by Staff Advisor/Convener

N.A.

Department/Society	Meeting Date	Purpose

E. College Functions

N.A.

College Function	Function Date	Role to be played

Academic Planner

A. Teaching Plan

Teacher's Name: **VISHAL DHAWAN**

Department: **MATHEMATICS**

Year: **2020-2021 (Even Semester)**

Course: **B.Sc. (Hons.) Mathematics**

Paper Type: **Theory**

Semester: **VI**

Sl. No	UPC	Paper Name	Core/AECC/GE/SEC	Topic/Unit	Start Date	End Date
1	32357611	Linear Programming Problems and Theory of Games	Core	Linear programming problem: Formulation and solution by graphical method.	02/01/2021	09/01/2021
2	32357611	Linear Programming Problems and Theory of Games	Core	Extreme points; Basic solutions, Basic feasible solutions.	11/01/2021	16/01/2021
3	32357611	Linear Programming Problems and Theory of Games	Core	Reduction of any feasible solution to a basic feasible solution; Correspondence between basic feasible solutions and extreme points.	18/01/2021	23/01/2021
4	32357611	Linear Programming Problems and Theory of Games	Core	Algebraic Solution, Simplex Method: Optimal solution, Termination criteria for optimal solution of the linear programming problem, Unique optimal solution.	25/01/2021	30/01/2021

5	32357611	Linear Programming Problems and Theory of Games	Core	Alternate optimal solutions, Unboundedness. Simplex algorithm and its tableau format.	01/02/2021	06/02/2021
6	32357611	Linear Programming Problems and Theory of Games	Core	Continued: Simplex algorithm and its tableau format.	08/02/2021	13/02/2021
7	32357611	Linear Programming Problems and Theory of Games	Core	Artificial variables, Two-phase method, Big-M method.	15/02/2021	20/02/2021
8	32357611	Linear Programming Problems and Theory of Games	Core	Continued: Two-phase method, Big-M method.	22/02/2021	27/02/2021
9	32357611	Linear Programming Problems and Theory of Games	Core	Motivation and formulation of dual problem.	01/03/2021	06/03/2021
10	32357611	Linear Programming Problems and Theory of Games	Core	Primal-dual relationships.	08/03/2021	13/03/2021
11	32357611	Linear Programming Problems and Theory of Games	Core	Statements of the fundamental theorem of duality and complimentary slackness theorem with examples.	15/03/2021	23/03/2021
				MID-SEMESTER BREAK	24/03/2021	30/03/2021
12	32357611	Linear Programming Problems and Theory of Games	Core	Transportation problem.	31/03/2021	03/04/2021
13	32357611	Linear Programming Problems and Theory of Games	Core	Assignment problem.	05/04/2021	10/04/2021
14	32357611	Linear Programming Problems and Theory of Games	Core	Game Theory: Basic concept, Formulation and solution of two-person zero-sum games.	12/04/2021	17/04/2021

15	32357611	Linear Programming Problems and Theory of Games	Core	Games with mixed strategies, Dominance Principle	19/04/2021	24/04/2021
16	32357611	Linear Programming Problems and Theory of Games	Core	Linear programming method of solving a game.	26/05/2021	30/05/2021

Year: 2020-2021 (Even Semester)

Course: B.Sc. (Prog.) Physical Science

Paper Type: Theory

Semester: IV

Sl. No.	UPC	Paper Name	Core/AECC/GE/SEC	Topic/Unit	Start Date	End Date
1	42354401	Real Analysis	Core	Finite and infinite sets, Examples of countable and uncountable sets.	02/01/2021	09/01/2021
2	42354401	Real Analysis	Core	Bounded sets, Statement of order completeness property of \mathbb{R} , Archimedean property of \mathbb{R} .	11/01/2021	16/01/2021
3	42354401	Real Analysis	Core	Real sequences, convergence, sum and product of convergent sequences, Order preservation and squeeze theorem.	18/01/2021	23/01/2021
4	42354401	Real Analysis	Core	Monotone sequences and their convergence with illustrations.	25/01/2021	30/01/2021
5	42354401	Real Analysis	Core	Bolzano–Weierstrass theorem (statement and examples), Cauchy Sequences.	01/02/2021	06/02/2021
6	42354401	Real Analysis	Core	Examples of Cauchy Sequences, Cauchy Convergence Criterion for sequences.	08/02/2021	13/02/2021

7	42354401	Real Analysis	Core	Definition and a necessary condition for convergence of an infinite series, Geometric series, Cauchy convergence criterion for series, positively termed series, convergence of p-series, Comparison test, Limit comparison test and examples.	15/02/2021	20/02/2021
8	42354401	Real Analysis	Core	D'Alembert's ratio test.	22/02/2021	27/02/2021
9	42354401	Real Analysis	Core	Cauchy's root test.	01/03/2021	06/03/2021
10	42354401	Real Analysis	Core	Alternating series, Leibnitz's test, Absolute and conditional convergence.	08/03/2021	13/03/2021
11	42354401	Real Analysis	Core	Sequences and series of functions, Pointwise convergence.	15/03/2021	23/03/2021
				MID-SEMESTER BREAK	24/03/2021	30/03/2021
12	42354401	Real Analysis	Core	Uniform convergence of sequence of functions, Mn-Test.	31/03/2021	03/04/2021
13	42354401	Real Analysis	Core	Cauchy general principle for uniform convergence of series of functions, Weierstrass M-Test.	05/04/2021	10/04/2021
14	42354401	Real Analysis	Core	Definition of power series, Radius and interval of convergence, Power series expansions for exponential, sine and cosine functions and their properties.	12/04/2021	17/04/2021
15	42354401	Real Analysis	Core	Riemann Integration and examples.	19/04/2021	24/04/2021
16	42354401	Real Analysis	Core	Integrability of continuous and monotone functions.	26/05/2021	30/05/2021

Year: 2020-2021 (Even Semester)

Course: B.Sc. (Hons.) Mathematics

Paper Type: Practical

Semester: VI

Sl. No.	UPC	Paper Name	Core/AECC/GE/SEC	Topic/Unit	Start Date	End Date
1	32351601	Complex Analysis (Practical)	Core	Declaring a complex number and graphical representation. Algebra of complex numbers and some other related questions.	02/01/2021	09/01/2021
2	32351601	Complex Analysis (Practical)	Core	Algebra of complex numbers and some other related questions.	11/01/2021	16/01/2021
3	32351601	Complex Analysis (Practical)	Core	Graphical representation of Algebra of complex numbers: Sum and Difference.	18/01/2021	23/01/2021
4	32351601	Complex Analysis (Practical)	Core	Graphical representation of Algebra of complex numbers: Product and Quotient.	25/01/2021	30/01/2021
5	32351601	Complex Analysis (Practical)	Core	Computing the conjugate, modulus and phase angle of complex numbers.	01/02/2021	06/02/2021
6	32351601	Complex Analysis (Practical)	Core	Plotting of complex functions.	08/02/2021	13/02/2021
7	32351601	Complex Analysis (Practical)	Core	Plotting of a line segment and computing integral over straight line.	15/02/2021	20/02/2021
8	32351601	Complex Analysis (Practical)	Core	Continued: Plotting of a line segment and computing integral over straight line.	22/02/2021	27/02/2021
9	32351601	Complex Analysis (Practical)	Core	Plotting of contours and Contour integration.	01/03/2021	06/03/2021

10	32351601	Complex Analysis (Practical)	Core	Continued: Plotting of contours and Contour integration.	08/03/2021	13/03/2021
11	32351601	Complex Analysis (Practical)	Core	Taylor series for complex functions and Error estimation.	15/03/2021	23/03/2021
				MID-SEMESTER BREAK	24/03/2021	30/03/2021
12	32351601	Complex Analysis (Practical)	Core	Laurent series expansion for complex function.	31/03/2021	03/04/2021
13	32351601	Complex Analysis (Practical)	Core	Poles and residues.	05/04/2021	10/04/2021
14	32351601	Complex Analysis (Practical)	Core	Conformal mapping and bilinear transformation.	12/04/2021	17/04/2021
15	32351601	Complex Analysis (Practical)	Core	Taylor series for complex functions and Error estimation.	19/04/2021	24/04/2021
16	32351601	Complex Analysis (Practical)	Core	The Conduct of Online Practical Examination.	26/05/2021	30/05/2021

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Project Name / Paper Name			
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Faculty-in-Charge		Number of Students going	

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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
563	B.Sc. (Hons.) Mathematics	32357611	Test: Linear Programming and Theory of Games	Tuesday 16/03/2021	05/04/2021
582	B.Sc. (Prog.) Physical Science	423564401	Test: Real Analysis	Wednesday 17/03/2021	05/04/2021
563	B.Sc. (Hons.) Mathematics	32351601	Test: Complex Analysis (Practical)	Thursday 18/03/2021	05/04/2021
563	B.Sc. (Hons.) Mathematics	32357611	Assignment: Linear Programming and Theory of Games	Tuesday 23/03/2021	05/04/2021
582	B.Sc. (Prog.) Physical Science	423564401	Assignment: Real Analysis	Tuesday 23/03/2021	05/04/2021
563	B.Sc. (Hons.) Mathematics	32351601	Assignment: Complex Analysis (Practical)	Tuesday 23/03/2021	05/04/2021

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D. Organization of Department/College Society Meetings by Staff Advisor/Convener

N.A.

Department/Society	Meeting Date	Purpose

E. College Functions

N.A.

College Function	Function Date	Role to be played