I – Academic Planner

A. Teaching Plan (Year : _2020_____ Semester: Odd)

Teacher's Name _Dr. Meenu Devi_____ Department_____Mathematics_____

Sl. No.	UPC	Paper Name	Core /AECC/ GE/ SEC	Topic/Unit	Start Date	End Date
1.	42354302	Algebra	B.SC(P) SEM III CORE	Groups: Definition and examples of Abelian and non-abelian groups, The group $\mathbb{Z}_n$ of integers under addition modulo n and the group U(n) of units under multiplication modulo n; Cyclic groups from sets of numbers, Group of nth roots of unity, The general linear group; Elementary properties of groups. Groups of symmetries of (i) an isosceles triangle, (ii) an equilateral triangle, (iii) a rectangle, and (iv) a square; The permutation group Sym(n), and properties of permutations. Order of an element, Subgroups and its examples,	21/08/2020	21/09/2020
				Subgroup tests, Cyclic Subgroup, Center of a group, Properties of cyclic groups.Cosets and its properties, Lagrange's Theorem, Index of a subgroup. Normal subgroups: Definition, examples and characterizations, Factor groups. Definition and examples of rings, commutative and noncommutative rings, Properties of rings.	22/09/2020	05/10/2020
				Subrings and ideals. Integral domains and fields, Examples of fields: $\mathbb{Z}$, $\mathbb{Q}$, $\mathbb{R}$ and $\mathbb{C}$. Definition and examples of vector spaces, Subspaces, Linear independence, Basis and dimension of a vector space. Linear transformations, Null spaces, Ranges and illustrations of the rank-nullity theorem.	15/10/2020	12/11/2020

2	42353501	Computer Algebra systems	B.SC (P) SEM III SEC	Computer Algebra Systems (CAS), Use of a CAS as a calculator, Simple programming in a CAS.Computing and plotting functions in 2D, Customizing plots, Animating plots, Producing table of values, Working with piecewise defined functions, Combining graphics. Factoring, Expanding and finding roots of polynomials, Working with rational and trigonometric functions, Solving general equations.Computing limits, First and higher order derivatives, Maxima and minima, Integration,computing definite and indefinite integrals. Performing Gaussian elimination, Operations (transpose, determinant, and inverse),Minors and cofactors, Solving systems of linear equations, Rank and nullity of a matrix, Eigenvalue,Eigenvector and diagonalization.	21/08/2020 22/09/2020 15/10/2020	21/09/2020 05/10/2020 12/11/2020
	32355345	Linear Programming and Game Theory	GE 3	Introduction to linear programming problem: Graphical method of solution, Basic feasible solutions, Linear programming and convexity. Introduction to the simplex method: Theory of the simplex method, Optimality and unboundedness. Simplex tableau and examples, Artificial variables.Introduction to duality, Formulation of the dual problem with examples and interpretations,Statement of the duality theorem with examples.Definition and mathematical formulation of transportation problems, Methods of finding initial basic feasible solutions, North West corner rule, Least-cost method, Vogel's approximation method, Algorithm for solving transportation problems. Mathematical formulation and Hungarian method of solving assignment problems.Introduction to game theory, Formulation of two-person zero-sum rectangular game, Solution of rectangular games with saddle points.Mixed strategies, Dominance principle, Rectangular games without saddle points, Graphical and linear programming solution of rectangular games.	21/08/2020 22/09/2020 15/10/2020	21/09/2020 05/10/2020 12/11/2020

B. Outstation Field visits for students

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
	B.SC(P) SEM III CORE	42354302	ALGEBRA	5/11/2020	
	B.Sc(Prog.) SEM IV	42353501	**Computer algebra system**		
	GEIII	32355345	Linear Programming and Game Theory	17/11/2020	

***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

Department/Society	Meeting Date	Purpose

E. College Functions

College Function	Function Date	Role to be played

I – Academic Planner

A. Teaching Plan (Year : ____2021_____ Semester: Even)

Teacher's Name ___Dr. Meenu Devi_____ Department__Mathematics_____

Sl. No.	UPC	Paper Name	Core /AECC/ GE/ SEC	Topic/Unit	Start Date	End Date
1	32355444	Element of Analysis	GE-4	Finite and infinite sets, Examples of countable and uncountable sets; Absolute value of the real line, bounded sets, suprema and infima; Statement of order completeness property of $\mathbb{R}$, Archimedeanproperty of $\mathbb{R}$.Real sequences, Convergence, Sum and product of convergent sequences, Order preservation and squeeze theorem.Monotone sequences and their convergence, Proof of convergence of some simple sequences.Subsequences and the Bolzano Weierstrass theorem (statement and examples), Limit superior and limit inferior of a bounded sequence (definition and examples), Statement and illustrations of Cauchy convergence criterion for sequences.	01/01/2021	21/02/2021
				Definition and a necessary condition for convergence of an infinite series, Geometric series, Cauchy convergence criterion for series, positive term series, State the integral test and prove the convergence of p-series, Comparison test, Limit comparison test and examples.D'Alembert's ratio test, Cauchy's root test.	22/02/2021	20/03/2021
				Alternating series, Leibnitz test; Absolute and conditional convergence. Definition of power series, Radius and interval of convergence, CauchyHadamard theorem. Statement and illustration of term-by-term differentiation, Integration of power series and Abel's theorem. Power series expansions and their properties.	01/04/2021	22//04/2021
2	32353401	Computer Algebra Systems	SEC	Computer Algebra System (CAS), Use of a CAS as a calculator, Computing and plotting functions in 2D, producing tables of values, working with piecewise defined functions,	01/01/2021	21/02/2021

		and Related Software		Combining graphics. Simple programming in a CAS. Plotting functions of two variables using Plot3D and ContourPlot, Plotting parametric curves surfaces, Customizing plots, Animating plots. Working with matrices, Performing Gauss elimination, operations (Transpose, Determinant, Inverse), Minors and cofactors, working with large matrices, Solving system of linear equations, Rank and nullity of a matrix, Eigenvalue, Eigenvector and diagonalization. as a calculator, explore data and relationships in **R.** Reading and getting data into **R:** Combine and scan commands, Types and structure of data items with their properties. Manipulating vectors, Data frames, Matrices and Lists. Viewing objects within objects. Constructing data objects and conversions. Summary commands**:** Summary statistics for vectors, Data frames, Matrices and lists. Summary tables. Stem and leaf plot, histograms. Plotting in **R:** Box-whisker plots, Scatter plots, Pairs plots, Line charts, Pie charts, Cleveland dot charts and Bar charts. Copy and save graphics to other applications.	22/02/2021 01/04/2021	20/03/2021 22//04/2021
3	42357618	Numerical Methods	DSE2	Floating point representation and computer arithmetic, Significant digits; Errors: Roundoff error, Local truncation error, Global truncation error; Order of a method, Convergence and terminal conditions.Bisection method, Secant method, RegulaFalsi method, NewtonRaphson method. Gaussian elimination method (with row pivoting), Gauss Jordan method; Iterative methods: Jacobi method, Gauss Seidel method.Interpolation: Lagrange form, and Newton form.Finite difference operators, Gregory Newton forward and backward differenceinterpolations. Piecewise polynomial interpolation: Linear, and quadratic.Numerical differentiation: First and second order derivatives, Richardson extrapolation method.Numerical integration: Trapezoidal rule, Simpson's rule; Ordinary differential equations: Euler's method.Weeks 14: Modified Euler's methods: Heun's method, Midpoint method.	01/01/2021 22/02/2021 01/04/2021	21/02/2021 20/03/2021 22//04/2021
4.		Transportation flow	SEC	Transportation problem, Assignment problem, Traveling salesperson problem, Shortest-route problem, Minimum spanning tree algorithm, Maximum flow model, CPM and PERT calculations of exercises	01/01/2021	22/04/2021

		problem(Lab)				

B. Outstation Field visits for students

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
	B.Sc(H) CHEMISTRY GE-4	32355444	Element of Analysis	12/04/2021	
	B.SC(H) SEM IV SEC	32353401	Computer Algebra Systems and Related Software	17/04/2021	
	B.SC(P) SEM IV DSE	42357618	Numerical Methods	5/04/2021	

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