

I – Academic Planner

Teaching Plan (Year : 2021 Semester: odd)

Teacher's Name : Meenu Devi Department: Mathematics

Sl. No	UPC	Paper Name	Core/AE CC/ GE -/SEC	Topic/Unit	Start Date	End Date
1		algebra	AC	Definition and examples of groups, 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 n th 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, Subgroup tests,	21/08/2021	21/09/2021
		algebra	AC	Cyclic subgroup, Center of a group, Properties of cyclic groups; Cosets and its properties, Lagrange's theorem, Index of a subgroup; Definition and examples of normal subgroups. Definition and examples of rings, Commutative and noncommutative rings, Properties of rings, Subrings and ideals; Integral domains and fields, Examples of fields: $\mathbb{Z}, \mathbb{Q}, \mathbb{R}$ and \mathbb{C} .	22/09/2021	5/10/2021
		algebra	AC	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.	15/10/2021	12/11/2021
2		Abstract algebra	Sem 3rd	Definition and examples of groups, 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 n th roots of unity, The general linear group; Elementary properties of groups; Groups of symmetries of (i) an isosceles triangle,	21/08/2021	21/09/2021

				(ii) anequilateral 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, Subgroup tests,		
		Abstract algebra	Sem 3rd	Cyclic subgroup, Center of a group, Properties of cyclic groups; Cosets and its properties, Lagrange's theorem, Index of a subgroup; Definition and examples of normal subgroups. Definition and examples of rings, Commutative and noncommutative rings, Properties of rings, Subrings and ideals; Integral domains and fields, Examples of fields: \mathbb{Z} , \mathbb{Q} , \mathbb{R} and \mathbb{C}	22/09/2021	5/10/2021
		Abstract algebra	Sem 3rd	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.	15/10/2021	12/11/2021
3		Mechanics and Discrete Mathematics	Sem 5th	Conditions of equilibrium of a particle and of coplanar forces acting on a rigid body, Laws of friction, Problems of equilibrium under forces including friction, Centre of gravity, Work and potential energy; Velocity and acceleration of a particle along a curve: Radial and transverse components (plane curve), Tangential and normal components (space curve); Newton's laws of motion, Simple harmonic motion, Simple pendulum, Projectile motion.	21/08/2021	21/09/2021
		Mechanics and Discrete Mathematics	Sem 5 th	Types of graphs: Simple graph, Directed graph, Multi graph, and Pseudo graph; Graph modelling, Terminology and basics; Special graphs: Complete graph, Cycles, n-dimensional cubes, Bipartite graph, Complete bipartite graph; Subgraph and basic algebraic operations on graphs, Connectivity, Paths, Cycles, Tree to be introduced as a connected graph with no cycles.	22/09/2021	5/10/2021
		Mechanics and Discrete Mathematics	Sem 5 th	Introduction to shortest path (least number of edges) problem, Solution of shortest path problem for simple graphs using complete enumeration; Euler and Hamiltonian graphs (for undirected graphs only): Königsberg bridge problem, Statements and interpretations of (i) Necessary and sufficient conditions for Euler cycles and paths (ii) Sufficient condition for Hamiltonian cycles; Finding Euler cycles and Hamiltonian cycles in a given graph.	15/10/2021	12/11/2022

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	Unique Paper Code	Topic Name	Day and Date	Date/s of Exhibiting the Assessment Sheet to students, Discussing the marks, Returning/Retaining

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

I – Academic Planner

Teaching Plan (Year : 2022 Semester: Even)

Teacher's Name : Meenu Devi Department: Mathematics

Sl. No .	UPC	Paper Name	Core/A ECC/ GE - /SEC	Topic/Unit	Start Date	End Date
1	32355444	Elements of Analysis	GE-4	Finite and infinite sets examples of countable and uncountable sets. Real line; absolute value bounded sets suprema and infima, statement of order Completeness property of \mathbb{R} , Archimedean property of \mathbb{R} , intervals. Real sequences, Convergence, sum and product of convergent sequences, proof of convergence of some simple sequences such as $(-1)^n/n$, $1/n^2$, $(1+1/n)^n$, x^n with $ x < 1$, a_n/n , where a_n is a bounded sequence. Concept of cluster points and statement of Bolzano Weierstrass' theorem. Statement and illustration of Cauchy convergence criterion for sequences. Cauchy's theorem on limits, order preservation and squeeze theorem, monotone sequences and their convergence	10/01/2022	20/02/2022
	32355444	Elements of Analysis	GE-4	Definition and a necessary condition for convergence of an infinite series. Cauchy convergence criterion for series, positive term series, geometric series, comparison test, limit comparison test, convergence of p-series, Root test, Ratio test, alternating series, Leibnitz's test. Definition and examples of absolute and conditional convergence.	22/02/2022	20/03/2022
	32355444	Elements of Analysis	GE-4	Definition of power series: radius of convergence, Cauchy-Hadamard theorem, statement and illustration of term-by-term differentiation and integration of power series. Power series expansions for $\exp(x)$, $\sin(x)$, $\cos(x)$, $\log(1+x)$ and their properties	1/04/2022	22/04/2022

2		Statistical software R	SEC	Introducing R, using R as a calculator; Explore data and relationships in R; Reading and getting data into R: combine and scan commands, viewing named objects and removing objects from R, Types and structures of data items with their properties, Working with history commands, Saving work in R; Manipulating vectors, Data frames, Matrices and lists; Viewing objects within objects, Constructing data objects and their conversions.	1/01/2022	2/02/2022
		Statistical software R	SEC	Summary commands: Summary statistics for vectors, Data frames, Matrices and lists; Summary tables. Stem and leaf plot, Histograms, Density function and its plotting, The Shapiro-Wilk test for normality, The Kolmogorov-Smirnov test.	3/02/2022	20/03/2022
		Statistical software R	SEC	Plotting in R: Box-whisker plots, Scatter plots, Pairs plots, Line charts, Pie charts, Cleveland dot charts, Bar charts; Copy and save graphics to other applications.	1/04/2022	20/04/2022
3						

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