Maharaja Manindra Chandra College
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Teacher's name	Paper name with code	Topic	Time period	Subtopic
Antara Mitra Datta	Basic Physics 1 DSCC1	Vectors	1st week of November,2025	Dot, cross, scalar triple and vector triple products of cartesian vectors (using LeviCivita symbol and summation convention).
			2nd week of November,2025	Vector differentiation
			2nd and 3rd week of November,2025	Scalar and vector fields -gradient, divergence, curl and Laplacian (for Cartesian coordinates), solenoidal and irrotational vector field.
			4th week of November,2025	Statement and proof of Divergence theorem and Stokes' theorem; application to simple cases.
		Curvilinear coordinates	1st week of December,2025	Plane polar, spherical polar and cylindrical polar coordinates: their unit vectors, role of unit vectors as basis vectors.
			1st week of December,2025	Surface and volume element (from geometry). Line, surface and volume integrals.
			2nd week of December,2025	Form of the gradient operator in curvilinear coordinates.
			2nd and 3rd week of December,2025	Velocity and acceleration of point particle in Cartesian, plane polar, spherical polar, cylindrical polar coordinates.

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Teacher's name	Paper name with code	Topic	Time period	Subtopic
Sonali Chakrabarti	DSC-1/Minor1:Basic Physics- 1	Classical Mechanics	Nov 1st week	Review of Newton's laws
			Nov 2nd week	Galilean transformation and invariance. Problems involving resistive forces.
			Nov 3rd week	Study of rotational motion. Dynamics of system of particles.
			Nov 4th week	Reduced mass and centre of mass. Central force preliminary topic.
			Dec 1st week	Newton's law of Gravitation and related problems. Kepler's laws and calculation of orbits.

Teacher's name	Paper name with code	Topic	Time period	Subtopic
Mimi Dan Dutta	Basic Physics 1 DSCC1	Preliminaries	1st week of November,2025	SI system of units, dimensional analysis. Plotting of functions (both cartesian and polar), Limits, Intuitive ideas about continuity and differentiability of a function.
			2nd week of November,2025	Taylor series of one variable and binomial series

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			4th week of November,2025	Exact and inexact differentials.
		Ordinary Differential Equations	1st week of December,2025	First order linear differential equations and integrating factor
			2nd week of December,2025	Linear second order homogeneous equations with constant coefficients
			3rd week of December,2025	Linear second order homogeneous equations with constant coefficients,Simple Harmonic motion as an Example.

Teacher's name	Paper name with code	Topic	Time period	Subtopic
Hurmal Saren	Introduction to Computer Programming and Graph Plotting **PHS SEC-1-1**	Graph Plotting using GNUPLOT	1st week of November,2025	Basic function plotting,
			2nd week of November,2025	Parametric Plot
			3rd week of November,2025	Polar plot
			4th week of November, 2025	Define and plot functions in certain range.
			1st week of December, 2025	Data Plot and fitting using gnuplot

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Shyamal Mondal		Introduction to programming using Python	3rd week of November, 2025	Installation of Python in Windows and Linux platform (a) Introduction Using the python interpreter as a calculator Variable and data types (int, float, complex, list, tuple, set, string, the type () function) Basic mathematical operations
			4th week of November, 2025	Compound statements in python - Conditionals (if, elif, else) - Loops (for, while) - User defined functions def: (return statement, default values for arguments, keyword arguments), lambda function. Importing modules with math and cmath as examples Using help and dir command to use the inbuilt manual Basic idea of namespaces - local and global Python scripts, I/O operations (including opening and writing to files)

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			1st and 2nd week of December, 2025	The python data types List: defining lists, reading and changing elements from lists, slicing . - built in functions involving lists: range(), len(), sum(), min(), max() - list methods: ppend(),extend(), count(), index(), sort(), insert(), pop(), remove(), reverse() Tuples: Contrast and compare with lists, packing/unpacking using tuples (including *a*,*b* = *b*,*a* to swap variables) Sets : set methods: update(), pop(), remove(), Set Theoretic operations: union, intersection, difference and symmetric difference of two sets Strings: defining strings, the use of single, double or triple quotes as string delimiters, len(),indexing, slicing, string concatenation, some string methods: strip(), split(), join(), find(), count(), replace(), string formatting in python.

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			3rd week of December, 2025	**Problems and Applications** Finding factors of an integer Determining whether an integer is prime or not Finding out prime number greater than or lesser than a given value Finding out all prime numbers within a given range
			1st week of January, 2025	Root finding for a single variable (basic theory and algorithm) using Newton-Raphson and Bisection method Sorting of lists (algorithm, flowchart and code) using Bubble or Selection sort Sum of series correct up to given decimal places (Sine, Cosine, Exponential etc.)
			2nd week of January	Simulation of motion of a particle in 1D under a given force $F(x, t, v)$ with given initial condition and plotting (x, t), (x, v), (t, v). (Output to be saved in data files and Gnuplot to be used to plot graphs), using Euler's method only Matrix Addition,Multiplication and Transpose using List Comprehension

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