

LESSON PLAN

SUBJECT: MATHEMATICS-I

BRANCH: COMMON

SEMESTER: 1ST (2025-26)

NAME OF THE FACULTY: SARAT CHANDRA ROUT &
MANAS KUMAR MAHALIK



GOVERNMENT POLYTECHNIC, BHADRAK

Jahatke

HOD, Humanities & Sciences

[Signature]

Academic Coordinator

[Signature]

Principal

Govt. Polytechnic, Bhadrak

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LESSON PLAN (MATHEMATICS I)

Discipline: All	Semester: 1 st	Name of the teaching faculty: Manas Kumar Mahalik, Lecturer(S-II) in Mathematics
Subject: Mathematics I (Th-3)	No. of days/week class allotted: 4	Semester from date: 06/08/2025 To date: 04/12/2025 No. of weeks: 18
Week	Class Day	Theory Topics
1 st (06.08.2025- 08.08.2025)	1 st	UNIT I: TRIGONOMETRY: Concept of angles, measurement of angles in degree, grades and radians and their conversions. Problems discussion.
	2 nd	Some more problems on conversion of angles. T-ratios of allied angles.
	3 rd	ASTC Rules. Angles in acute angles with examples.
2 nd (10.08.2025- 16.08.2025)	1 st	Sum, difference formulae and their applications. Problem discussion.
	2 nd	Some more problems on sum and difference applications.
	3 rd	Product formulae
	4 th	Formulae to transform the sum or difference into product like $\sin C + \sin D, \sin C - \sin D, \cos C + \cos D, \cos C - \cos D$ with examples.
3 rd (18.08.2025- 22.08.2025)	1 st	Formulae to transform the product into sum or difference like $2 \sin \alpha \cdot \cos \beta, 2 \cos \alpha \cdot \sin \beta$ with problem discussion.
	2 nd	T-Ratios of multiple and sub multiple angles ($2A, 3A, \frac{A}{2}, \frac{A}{3}$) with examples
	3 rd	More problems on multiple and sub multiple angles
	4 th	Graph of a function. Domain and range of trigonometric functions
4 th (25.08.2025- 30.08.2025)	1 st	Graph of $\sin x, \cos x, \tan x, e^x$
	2 nd	Revision
	3 rd	UNIT 2: DIFFERENTIAL CALCULUS: Definition of a function. Domain, Codomain, Range of a function
	4 th	Different types of functions and graphs
5 th (01.09.2025- 06.09.2025)	1 st	Limit of a function. Left Hand Limit, Right Hand Limit, Existence of a limit with examples
	2 nd	Four Standard limits $\lim_{x \rightarrow a} \frac{x^n - a^n}{x - a}, \lim_{x \rightarrow 0} \frac{\sin x}{x}, \lim_{x \rightarrow 0} \frac{a^x - 1}{x}, \lim_{x \rightarrow 0} (1 + x)^{\frac{1}{x}}$
	3 rd	Problems on above limits
	4 th	Some more problems on the above limits
6 th (08.09.2025- 12.09.2025)	1 st	Differentiation of a function by definition $x^n, \sin x, \log_a x$ with examples
	2 nd	Differentiation of a function by definition $\cos x, \tan x, e^x$ with examples.
	3 rd	Algebra of Differentiation with examples
	4 th	Differentiation of composite functions(Chain rule) with examples
7 th (15.09.2025- 20.09.2025)	1 st	Problem on chain rule
	2 nd	Differentiation of trigonometric functions
	3 rd	Differentiation of Inverse trigonometric Functions with examples
	4 th	Logarithmic Differentiation with examples Problems on Logarithmic Differentiation

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8 th (22.09.2025-26.09.2025)	1 st	Differentiation of exponential function with examples
	2 nd	Problems on derivatives
	3 rd	Quiz
	4 th	<u>UNIT III: ALGEBRA</u> Complex Numbers: Real and imaginary numbers, definition of a complex number, real and imaginary parts of a complex number.Examples
9 th (03.10.2025-04.10.2025)	1 st	Polar , Cartesian representation of a complex number and its conversion from one form to other.
	2 nd	conjugate of complex numbers, modulus of a complex number with examples
10 th (06.10.2025-10.10.2025)	1 st	Amplitude of a complex number, geometrical representation of a complex number with example
	2 nd	Addition, subtraction , multiplication and division of complex numbers with examples
	3 rd	Addition, subtraction , multiplication and division of complex numbers with examples
	4 th	De-Moivre's theorem and problem solving
11 th (13.10.2025-18.10.2025)	1 st	Problem solving using De-Moivre's Theorem
	2 nd	Solving Problems on amplitude of a complex number and De-moivre's theorem
	3 rd	Partial Fractions: Definition of polynomial fraction proper and improper fractions and partial fractions with examples.To resolve proper fraction into partial fraction with denominator containing non repeated linear factors with examples
	4 th	To resolve proper fraction into partial fraction with denominator containing non repeated linear factors, repeated linear factors with examples
12 th (20.10.2025-24.10.2025)	1 st	To resolve proper fraction into partial fraction with denominator containing irreducible non-repeated quadratic factors with examples
	2 nd	To resolve improper fraction into partial fraction with examples
	3 rd	Problem solving on partial fraction
	4 th	Quiz(Class Test)
13 th (27.10.2025-01.11.2025)	1 st	Permutations & Combination: Counting principle
	2 nd	Definition of permutation and mathematical notation, Formula, factorial
	3 rd	Strategies using permutation , problem discussion
	4 th	Solving problems on permutation
14 th 03.11.2025-07.11.2025)	1 st	Quiz
	2 nd	Definition of Combination, mathematical notation, formula
	3 rd	Where to use combination, example
	4 th	Solving problems on Combination
15 th (10.11.2025-15.11.2025)	1 st	Quiz
	2 nd	Revision of Permutation and combination
	3 rd	Binomial Theorem: Binomial theorem for positive integral index(expansion and general form) ,example
	4 th	Binomial theorem for any index, example

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16 th (17.11.2025- 21.11.2025)	1 st .	Binomial coefficients, general term, equidistant terms with examples
	2 nd	Middle terms, first and second approximation and applications with examples
	3 rd	Some more problems on binomial theorem
	4 th	Revision
17 th (24.11.2025- 29.11.2025)	1 st	Previous year question discussion
	2 nd	Previous year question discussion
	3 rd	Previous year question discussion
	4 th	Previous year question discussion
18 th (01.12.2025- 04.12.2025)	1 st	Previous year question discussion
	2 nd	Previous year question discussion
	3 rd	Previous year question discussion
	4 th	Previous year question discussion

Jahak
30/07/2025
Signature of the Faculty

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