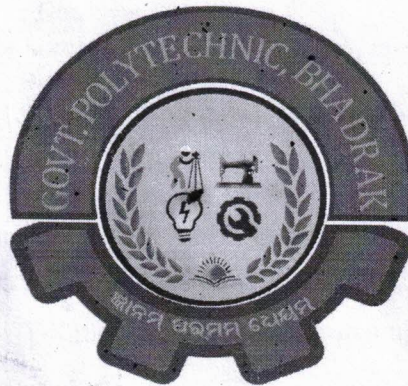# LESSON PLAN

SUB:- MATHEMATICS-1

BRANCH:- ALL

SEMESTER:1ST

SESSION:2024-25

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

GOVERNMENT POLYTECHNIC, BHADRAK

Hod Math& Sc.

Academic Co-ordinator

Academic Co-ordinator

Principal
Govt. Polytechnic Bhadrak

GOVT. POLYTECHNIC, BHADRAK
LESSON PLAN (MATHEMATICS I)

Discipline: All	Semester: 1st	Name of the teaching faculty: Sri Sarat Chandra Rout & Sri Manas Kumar Mahalik,
Subject: Mathematics I (Th-3)	No. of days/week class allotted: 4	Semester from date: 16/08/2024 To date: 10/12/2024 No. of weeks: 14

Week	Class Day	Theory Topics
1st (16.08.2024-17.08.2024)	1st	UNIT I: TRIGONOMETRY: Concept of angles, measurement of angles in degree, grades and radians and their conversions. Problems discussion.
	2nd	Some more problems on conversion of angles. T-ratios of allied angles.
2nd (19.08.2024-24.08.2024)	1st	ASTC Rules. Angles in acute angles with examples.
	2nd	Sum; difference formulae and their applications. Problem discussion.
	3rd	Some more problems on sum and difference applications.
	4th	Product formulae
3rd (26.08.2024-31.08.2024)	1st	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.
	2nd	Formulae to transform the product into sum or difference like $2\sin\alpha.\cos\beta, 2\cos\alpha.\sin\beta$ with problem discussion.
	3rd	T-Ratios of multiple and sub multiple angles($2A, 3A, \dfrac{A}{2}, \dfrac{A}{3}$) with examples
	4th	More problems on multiple and sub multiple angles
4th (02.09.2024-07.09.2024)	1st	Graph of a function. Domain and range of trigonometric functions
	2nd	Graph of $\sin x, \cos x, \tan x, e^x$
	3rd	Revision
	4th	UNIT 2: DIFFERENTIOAL CALCULUS: Definition of a function. Domain, Codomain, Range of a function
5th (09.09.2024-14.09.2024)	1st	Different types of functions and graphs
	2nd	Limit of a function. Left Hand Limit, Right Hand Limit, Existence of a limit with examoles
	3rd	Four Standard limits $\lim\limits_{x\to a}\dfrac{x^n-a^n}{x-a}, \lim\limits_{x\to 0}\dfrac{\sin x}{x}, \lim\limits_{x\to 0}\dfrac{a^x-1}{x}, \lim\limits_{x\to 0}(1+x)^{\frac{1}{x}}$
	4th	Problems on above limits
6th (16.09.2024-21.09.2024)	1st	Some more problems on the above limits
	2nd	Differentiation of a function by definition $x^n, \sin x, \log_a x$ with examples
	3rd	Differentiation of a function by definition $\cos x, \tan x, e^x$ with exampls.
	4th	Algebra of Differentiation with examples
7th (23.09.2024-28.09.2024)	1st	Differentiation of composite functions(Chain rule) with examples
	2nd	Problem on chain rule
	3rd	Differentiation of trigonometric functions
	4th	Differentiation of Inverse trigonometric Functions with examples
8th (30.09.2024-05.10.2024)	1st	Logarithimic Differentiation with examples
	2nd	Problems on Logarithmic Differentiation
	3rd	Differentiation of exponential function with examples

	4th	Problems on derivatives
9th (14.10.2024-19.10.2024)	1st	Quiz
	2nd	**UNIT III: ALGEBRA** **Complex Numbers:** Real and imaginary numbers, definition of a complex number, real and imaginary parts of a complex number.Examples
	3rd	Polar , Cartesian representation of a complex number and its conversion from one form to other.
	4th	conjugate of complex numbers,modulus of a complex number with examples
10th (21.10.2024-26.10.2024)	1st	Amplitude of a complex number, geometrical representation of a complex number with example
	2nd	Addition, subtraction , multiplication and division of complex numbers with examples
	3rd	Addition, subtraction , multiplication and division of complex numbers with examples
	4th	De-Moivre's theorem and problem solving
11th (28.10.2024-02.11.2024)	1st	Problem solving using De-Moivre's Theorem
	2nd	Solving Problems on amplitude of a complex number and De-moivre's theorem
	3rd	**Partial Fractions:** Definition of polynomial fraction properand improper fractions and partial fractions with examples.To resolve proper fraction into partial fraction with denominator containing non repeated linear factors with examples
	4th	To resolve proper fraction into partial fraction with denominator containing non repeated linear factors, repeated linear factors with examples
12th (04.11.2024-09.11.2024)	1st	To resolve proper fraction into partial fraction with denominator containing irreducible non-repeated quadratic factors with examples
	2nd	To resolve improper fraction into partial fraction with examples
	3rd	Problem solving on partial fraction
	4th	Quiz(Clas Test)
13th (11.11.2024-16.11.2024)	1st	**Permutations & Combination:** Counting principle
	2nd	Definition of permutation and mathematical notation, Formula, factorial
	3rd	Straties using permutation , problem discussion
	4th	Solving problems on permutation
14th 18.11.2024-23.11.2024)	1st	Quiz
	2nd	Definition of Combination, mathematical notation, formula
	3rd	Where to use combination, example
	4th	Solving problems on Combination
15th (25.11.2024-30.11.2024)	1st	Quiz
	2nd	Revision of Permutation and combination
	3rd	**Binomial Theorem:** Binomial theorem for positive integral index(expansion and general form) ,example
	4th	Binomial theorem for any index, example

16th (02.12.2024-07.12.2024)	1st	Binomial coeficients, general term, equidistant terms with examples
	2nd	MIddle terms, first and second approximation and applications with examples
	3rd	Some more problems on binomial theorem
	4th	Revision
17th (09.12.2024-10.12.2024)	1st	Previous year question discussion
	2nd	Previous year question discussion

Signature 10/08/2024

Signature of subject Lecturer

14/08/24

Signature of HOD, Math& Sc.