



**Bhubanananda Orissa School of Engineering,
Cuttack
Department of Humanities and Science**

LESSON PLAN
Academic Session: 2024-25 (winter)

Semester: 1st SEM

Branch: AE&I MECHATRONICS Sec: I

Subject: Mathematics

Prepared by: Bikram Sahoo

Discipline: Sec:I	Semester:1st		Name Of The Teaching Faculty: Bikram Sahoo (Faculty In Mathematics)
Subject: Mathematics	No. Of Days /Per Week Class Alloted:4P (Tue,Wed,Thu,Fri)	Semester From: Date:16/08/2024 to 10/12/2024	
Week	Class Days	Dates	Theory Topics
	1.	16.8.24	a) Introduction & Syllabus discussion
	2.	20.8.24	UNIT - I: Trigonometry :Concept of angles. measurement of angles in degrees, grades and radians and their conversions. T-Ratios of Allied angles (without proof)
	3.	21.8.24	Problem based on previous class
	4.	22.8.24	Book exercise practice
	5.	23.8.24	Sum, difference formulae and their applications (without proof).
	6.	27.8.24	Product formulae (Transformation of product to sum, difference and vice versa).
	7.	28.8.24	Problem based on previous class
	8.	29.8.24	Book exercise practice
	9.	30.8.24	T- Ratios of multiple angles, sub-multiple angles (2A, 3A, A/2).
	10.	3.9.24	Problem based on previous class
	11.	4.9.24	Graphs of sin x, cos x, tan x and e^x
	12.	5.9.24	Book exercise practice.
	13.	6.9.24	Problem on trigonometry.
	14.	10.9.24	Class test-1
	15.	11.9.24	UNIT-II: Differential Calculus Definition of function; Concept of limits.
	16.	12.9.24	Four standard form of limit $\lim_{x \rightarrow a} \left(\frac{x^n - a^n}{x - a} \right) = na^{n-1}$

	17.	13.9.24	Four standard form of limit continue.. $\lim_{x \rightarrow a} \left(\frac{x^n - a^n}{x - a} \right) = na^{n-1}$
	18.	17.9.24	$\lim_{x \rightarrow 0} \frac{\sin x}{x} = 1$
	19.	18.9.24	$\lim_{x \rightarrow 0} \frac{a^x - 1}{x} = \ln a$
	20.	19.9.24	$\lim_{x \rightarrow 0} (1 + x)^{\frac{1}{x}} = e$
	21.	20.9.24	Differentiation by definition of $x^n, \sin \theta, \cos \theta,$
	22.	24.9.24	Differentiation by definition of $\tan \theta, e^x, \log_a x$
	23.	25.9.24	Problem based on previous class
	24.	26.9.24	Logarithmic differentiation, Exponential functions.
	25.	27.9.24	Problem based on previous class
	26.	1.10.24	Book exercise practice
	27.	3.10.24	Class test-2
	28.	4.10.24	UNIT - III:Complex Numbers : imaginary Unity i , Algebra Complex Numbers: Definition, real and imaginary parts of a Complex number
	29.	15.10.24	Polar and Cartesian representation of a complex number and its conversion from one form to other.
	30.	17.10.24	Problem based on it.
	31.	18.10.24	conjugate ,modulus ,amplitude of a complex number
	32.	22.10.24	Problem based on it.
	33.	23.10.24	Addition, Subtraction, Multiplication and Division of a complex number.
	34.	24.10.24	Problem based on it.
	35.	25.10.24	De-movier's theorem, its application.

	36.	29.10.24	Problem based on it.
	37.	30.10.24	Book exercise practice.
	38.	1.11.24	Partial fractions: Definition of polynomial fraction. Proper & improper fractions . Definition of partial fractions.
	39.	5.11.24	To resolve proper fraction into partial fraction with denominator containing non-repeated linear factors
	40.	6.11.24	Problem based on it.
	41.	7.11.24	Repeated linear factors and irreducible non-repeated quadratic factors.
	42.	8.11.24	Problem based on it.
	43.	12.11.24	To resolve improper fraction into partial fraction.
	44.	13.11.24	Problem based on it.
	45.	14.11.24	Book exercise practice.
	46.	19.11.24	Permutations and Combinations: Value of nPr and nCr .
	47.	20.11.24	Binomial theorem: Binomial theorem (without proof) for positive integral index (expansion and general form) binomial theorem for any index (expansion without proof)
	48.	21.11.24	Problem based on it.
	49.	22.11.24	first and second binomial approximation with applications to engineering problems.
	50.	26.11.24	Problem based on it.
	51.	27.11.24	Book exercise practice.
	52.	28.11.24	Class test-3
	53.	29.11.24	
	54.	3.12.24	
	55.	4.12.24	

	56.	5.12.24	
	57.	6.12.24	
	58.	10.12.24	
	59.		
	60.		