	The Maharaja Sayajirao University of Baroda Polytechnic Department of Applied Mathematics Polytechnic, Near Shastri Bridge, Fatehgunj,Vadodara-2 0265-2781983, www.msubaroda.ac.in		ACADEMIC YEAR 2023-24	
Diploma in Mechanical Engineering				
Year	First	**Applied Mathematics-II (AMT 3208)**	Marks:	100 (Theory)+ 25 (Tutorial/Tw-Viva)
Semester	Second			

COURSE CONTENT / SYLLABUS

No.	TOPICS
UNIT-I	Determinants
	Equation of second and third order determinants, Properties, Minor and cofactors, solution of simultaneous linear equations in two and three unknowns, Consistency condition
	Matrices
	Definition and operation, Transpose, adjoint and Inverse of a matrix, solution of simultaneous linear equations in two and three unknowns.
	Vector Algebra
	Introduction, Addition of Vectors, Properties of Addition of Vectors, Subtraction of a vector, Multiplication of a Vector by scalar, Position Vector, Product of two Vectors, Scalar or dot Product. Work done as a scalar product, vector product of cross product, scalar triple product.
UNIT-II	Indefinite Integrals
	Standard formulae, Integration by substitution, Integration of Algebraic functions, Integration by parts, Trigonometric substitutions, Integration by the method of partial fractions
UNIT-III	Definite Integration
	Definite Integrals : Definition, Definite Integrals as the limit of a sum, Fundamental theorem of Integral Calculus, properties of definite integrals
UNIT-IV	Application of Integration:
	Area under the curve, Volume of revolution, Approximate integrations (Simpson's rule, Trapezoidal rule), Center of gravity of plane regions, Length of Arc (Length of a Plane curve), The area of a surface of revolution.
UNIT-V	Differential Equations:
	Formation of differential equations, Separation of variables, Equations reducible to separation of variables, Homogeneous differential equations, Equation reducible to homogeneous, Linear Differential Equation, Equation Reducible to Linear form, Exact Differential Equations
UNIT-VI	Higher order linear differential equations
	Linear differential equations of higher order with constant coefficient and Engineering applications

REFERENCES

1.	Applied Mathematics Semester III (Common to all branches) by G.V.Kumbhojkar , Mrs. R.P.Kumbhojkar, Phadke Prakashan, Kolhapur. (14th Edition)
2.	Engineering Mathematics Semester II (Civil,Mechanical,Chemical,Electrical and Electronics Group) by G.V.Kumbhojkar , Mrs.R.P.Kumbhojkar, Phadke Prakashan, Kolhapur. (1st Edition)
3.	Polytechnic Mathematics Made Easy (Applied Mathematics) by Manjeet Singh , Dhanpat Rai & Co. (P) Ltd. (Edition 2004)
4.	Mathematics for Polytechnic students, Semester 3, by S. P. Deshpande, Pune Vidyarthi Gruha Prakashan. (For Diploma Students).
5.	Elementary Engineering Mathematics by B. S. Grewal, Khanna Publishers
6.	Kreyzig Erwin: Advanced Engineering Mathematics, Wiley Eastern Limited
7.	C R Wylie: Advanced Engineering Mathematics