RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL
OUTCOME BASED CURRICULUM

NAME OF THE PROGRAMME: (COMMON FOR ALL BRANCHES)
Name of Scheme :OCBC -2019 **COURSE CODE: 6804**

COURSE TITLE : MATHEMATICS SEMESTER-I

COURSE OUTCOMES

C104.1	Describe the algebraic processers to solve above equations by means of different concepts, explain combinatory and solve their problems.
C104.2	Determine the identities of trigonometry and solve their problems.
C104.3	Explain two dimensional co-ordinate geometry from concept of point up-to straight lines and solve its problems.
C104.4	Analyse the data by means of statistical processes.
C104.5	Explain the concepts of calculus, derive different methods of differentiation and integration and solve its problems
C104.6	Define concept of Vector Algebra and its application and calculate problems on it.

CO -PO MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
C104.1	3	3	3	3	3	3	3	3	3	3
C104.2	3	3	3	3	3	3	3	3	2	-
C104.3	3	3	2	2	2	2	2	1	3	-
C104.4	3	3	3	3	3	3	3	3	3	3
C104.5	3	3	3	3	3	3	3	-	-	2
C104.6	3	3	3	3	2	2	2	3	3	2

Course Objectives:

1. Apply the concept of matrices and determinants and their applications to solve the system of linear equations in different engineering field.
2. Apply and evaluate trigonometric concept in vector engineering field.
3. Apply the coordinate and vector algebra in solving the problems of statics and mechanics.
4. Create the basic concept of calculus.

COURSE CONTENTS

UNIT	CONTENTS	HRS	CO

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Unit-1 ALGEBRA	1.1 Permutation - Meaning of factorial n - Permutation of 'n' dissimilar thing taken 'r' at a time, 1.2 Combination - Combination of n dissimilar things taken 'r' at a time, 1.3 Binomial Theorem - Statement of the theorem for positive integer - General Term, Middle term, Constant term 1.4 Partial Fractions - Define a proper - Break a fraction into partial fraction whose denominator contains Linear, Repeated linear and Non repeated quadratic factors. 1.5 STATISTICS- Measures of Central tendency (Mean, Mode, Median) 5.2 Measures of Dispersion (Mean deviation, standard deviation) 1.6 Complex Number Algebra of Complex Numbers - Polar form.	**26**	C104.1, C104.4
Unit-2 TRIGONOMETRY	2.1 Allied angles. 2.2 Trigonometrical ratios of sum and difference of angles, (Only statement) 2.3 Sum and difference of trigometric ratios (C-D formula) 2.4 Multiple angles (Only double angle and half angle) 2.5 Properties of triangle (without proof)	**21**	C104.2
Unit-3 DETERMINANT AND MATRIX	3.1 Determinant - Concept & principles of determinants - Properties of determinant - Simple examples. Definition of Matrix. 3.2 Types of Matrix. - Row, Column, Square, Unit, Upper and lower triangular, Symmetric & Skew Symmetric, Singular and non Singular Matrices. 3.3 Adjoint of a Matrix. 3.4 Inverse of a Matrix.	**21**	C104.1
Unit-4 CO-ORDINATE GEOMETRY AND VECTOR ALGEBRA	4.1 Co-ordinate System : Cartesian and Polar. 4.2 Distance, Division, Area of a triangle. 4.3 Locus of a point and its equation. 4.4 Slope of St. Line - Angle between two St. lines. - Parallel and perpendicular St. lines. 4.5 Standard and general equation of St. line. Point of intersection of two st lines. 4.6 Concept of Vector and Scalar Quantities. 4.7 Different types of vectors. 4.8 Addition and subtraction of vectors.	**26**	C104.3, C104.6

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	4.9 Components of a vector 4.10 Multiplication of two vectors - Scalar Product - Vector Product - Applications (Work done, power &reactive power		
Unit-5 **DIFFERENTIATION AND INTEGRAL CALCULUS**	5.1 Define constant, variable, function. 5.2 Value of the function 5.3 Concept of limit of a function. 5.4 First Principle of Differentiation. 5.5 Standard results. 5.6 Derivatives of sum, difference, product, quotient of two functions. 5.7 Diff. coeff. of --function of a function, implicit function, parametric function. 5.8 Logarithmic Differentiation . 5.9 Definition of Integration as a inverse process of differentiation. 5.10 Standard Results (including inverse function) 5.11 Methods of Integration - Substitution - Integration by parts - Breaking up into partial fraction 5.12 Concept of Definite Integral	**26**	**Co5**

After completing this course:

(1) Students will be able to understand concept of permutation, combination, binomial expansion, partial fraction ,data and their classification. They will be able to calculate mean, median, mode, mean deviation and standard deviation.
(2) Students will be able to learn different identities of trigonometry and to apply them in different problems of trigonometry.
(3) Students will be able to know the concept & properties of determinants and different types of matrices and their arithmetic operations. They will be able to find the inverse of a given matrix.
(4) Students will be able to locate different points in a coordinate plane. They will be able to find the equation of a line in different form and distinguish scalars and vectors. They will be able to know dot and cross product of vectors and their different applications.
(5) Student will be able to understand the concept of function, limit, derivative and integreation

SUGGESTED SPECEFICATION FOR QUESTION PAPER DESIGN

UNIT NO	TITLE	TEACHING HRS	TENTATIVE DISTRIBUTION OF MARKS			
			R LEVEL	U LEVEL	A LEVEL	TOTAL

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1	ALGEBRA	26	6	4	4	14
2	TRIGONOMETRY	21	8	3	3	14
3	DETERMINANT AND MATRIX	21	5	5	4	14
4	CO-ORDINATE GEOMETRY AND VECTOR ALGEBRA	26	6	4	4	14
5	DIFFERENTIATION AND INTEGRAL CALCULUS	26	4	6	4	14
	TOTAL	120	29	22	19	70

REFERENCE BOOKS

1. Mathematics for Polytechnics Vol. I and II
   - Prepared by T.T.T.I. Bhopal
2. Differential Calculus
   - Gorakh Prasad
3. Integral Calculus
   - Gorakh Prasad
4. Co-ordinate Geometry
   - S.L. Loni
5. Engineering Mathematics (M.P. Hindi Granth Akadami)
   - Dr. S.K. Chouksey & Manoj Singh
6. Mathematical Statistics
   - Ray and Sharma
7. Higher Engineering Mathematics
   - B.S. Grewal

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