

INSTITUTE	DIPLOMA STUDIES
PROGRAM	DIPLOMA ENGINEERING (MECHANICAL ENGINEERING)
SEMESTER	2
COURSE TITLE	MATHEMATICS-II
COURSE CODE	09MA2102
COURSE CREDITS	4

Objective:

- 1 Students are intended to understand the basic concepts and principles of Mathematics such as Determinant and matrix, Equations, Function, limit of functions and arithmetic and geometric progression. This knowledge is required to understand and solve Engineering problems. The course will empower students to use proper Mathematical tool to understand Engineering principles and concepts. Main objective of the course is to apply concepts of Determinant and matrix, Equations, Function and limit and arithmetic and geometric progression or suitable Mathematical tool to solve given engineering problems.

Course Outcomes: After completion of this course, student will be able to:

- 1 Learn concept of Matrix and Determinant and solve the system of linear equations by using matrix.
- 2 Solve equations of algebraic expressions using algebraic skills.
- 3 Solve the problems using functions.
- 4 Solve the problem of function using the concept of Limit.
- 5 Find the nth term and Sum of arithmetic and geometric progression.

Pre-requisite of course:NA

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
2	2	0	50	30	20	25	25

Contents : Unit	Topics	Contact Hours
1	Determinants and Matrices Introduction, Algebra of Matrices, Determinant of Matrix, Inverse of Matrix up to 3×3 matrix, Solution of Simultaneous Equation (up to 3 variable)	8
2	Equations System of Linear Equation, Solution of Quadratic Equation, Solution of Cubic Equation	6

Contents : Unit	Topics	Contact Hours
3	Function Introduction of Function, Algebra of Function, Example of Function	4
4	Limit of functions Definition and some properties of limits, Limit of polynomial and rational functions, Limit of trigonometric function, Limit of exponential function, Limit at infinity	6
5	Arithmetic and Geometric Progression Introduction, Nth term of A.P, Sum of first N terms of A.P, Nth term of G.P, Sum of first N terms of G.P	4
Total Hours		28

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
1	Determinants and Matrices Algebra of Matrices, Determinant of Matrix, Inverse of Matrix up to 3×3 matrix, Solution of Simultaneous Equation	8
2	Equations System of Linear Equation, Solution of Quadratic Equation, Solution of Cubic Equation	6
3	Function Algebra of Function, Example of Function	4
4	Limit of functions Limit of polynomial and rational functions, Limit of trigonometric function, Limit of exponential function and Limit at infinity	6
5	Arithmetic Progression Nth term of A. P, Sum of first N terms of A. P	4
Total Hours		28

Textbook :

- 1 Class-XI science Mathematics, NCERT, NCERT, 2021
- 2 Class-XII science Mathematics Part-I, NCERT, NCERT, 2021
- 3 Class-X Mathematics, NCERT, NCERT, 2021
- 4 B.S. Grewal, Higher Engineering Mathematics. , -, Khanna Publishers, 2007

References:

- 1 Higher Engineering Mathematics, Higher Engineering Mathematics, B.S. Grewal, Khanna Publishers, 2007

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery and evaluation

Remember / Knowledge	Understand	Apply	Analyze	Evaluate	Higher order Thinking
30.00	30.00	30.00	10.00		

Instructional Method:

- 1 The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, Quiz, brainstorming.
- 2 The internal evaluation will be done on the basis of continuous evaluation of students in the class-rooms

Supplementary Resources:

- 1 <https://en.wikipedia.org/wiki/Determinant>
- 2 <https://en.wikipedia.org/wiki/Equation>
- 3 [https://en.wikipedia.org/wiki/Function_\(mathematics\)](https://en.wikipedia.org/wiki/Function_(mathematics))
- 4 https://en.wikipedia.org/wiki/Limit_of_a_function
- 5 https://en.wikipedia.org/wiki/Arithmetic_progression