Marwadi University

Syllabus for Diploma Engineering

All Branches

Semester – II

Subject Name: Mathematics II

Subject Code:09MA2102

Diploma Branches in which this subject is offered: All Branches

Objective: 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.

Credits Earned: 4 Credits

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

- learn concept of Matrix and Determinant and solve the system of linear equations by using matrix.
- solve equations of algebraic expressions using algebraic skills.
- solve the problems using functions.
- solve the problem of function using the concept of Limit.
- find the n^{th} term and Sum of arithmetic and geometric progression.

Pre-requisite of course: NA.

Teaching and Examination Scheme

Teaching Scheme (Hours)			Credits	Theory Marks			Tutorial/ Practical Marks		Total Marks
Theory	Tutorial	Practical		ESE	IA	CSE	Viva	Term work	
2	2	0	4	50	30	20	25	25	150

Contents

Unit	Topics	Lab Hours	Lecture Hours
1	**Determinants and Matrices** 1. Introduction 2. Algebra of Matrices 3. Determinant of Matrix 4. Inverse of Matrix up to 3×3 matrix 5. Solution of Simultaneous Equation (up to 3 variable)	**8**	**8**
2	**Equations** 1. System of Linear Equation 2. Solution of Quadratic Equation 3. Solution of Cubic Equation	**6**	**6**
3	**Function** 1. Introduction of Function 2. Algebra of Function 3. Example of Function	**4**	**4**
4	**Limit of functions** 1. Definition and some properties of limits 2. Limit of polynomial and rational functions 3. Limit of trigonometric function 4. Limit of exponential function 5. Limit at infinity	**6**	**6**
5	**Arithmetic and Geometric Progression** 1. Introduction 2. N^{th} term of A.P 3. Sum of first N terms of A.P 4. N^{th} term of G.P 5. Sum of first N terms of G.P	**4**	**4**
Total		**28**	**28**

List of Tutorials:

Topics	Lab Hours
Unit 1: Determinants and Matrices	
1. Algebra of Matrices	**2**
2. Determinant of Matrix	**2**
3. Inverse of Matrix up to 3×3 matrix	**2**
4. Solution of Simultaneous Equation (up to 3 variable)	**2**
Unit 2: Equations	
1. System of Linear Equation	**2**
2. Solution of Quadratic Equation	**2**
3. Solution of Cubic Equation	**2**
Unit 3: Function	
1. Algebra of Function	**2**
2. Example of Function	**2**
Unit 4: Limit of functions	
1. Limit of polynomial and rational functions	**2**
2. Limit of trigonometric function	**2**
3. Limit of exponential function and Limit at infinity	**2**
Unit 5: Arithmetic Progression	
1. N^{th} term of A. P	**2**
2. Sum of first N terms of A. P	**2**
Total	**28**

References Books:

Sr no.	Title of books	Book Link	Publication
1	NCERT Class-XI science Mathematics	https://ncert.nic.in/textbook.php?kemh1=0-16	NCERT
2	NCERT Class-XII science Mathematics Part=I	https://ncert.nic.in/textbook.php?lemh1=0-6	NCERT
3	NCERT Class-X Mathematics	https://ncert.nic.in/textbook.php?jemh1=0-15	NCERT
4	B.S. Grewal, Higher Engineering Mathematics,	_	Khanna Publishers, New Delhi, 40th Edition, 2007.

References Links:

1. https://en.wikipedia.org/wiki/Determinant
2. https://en.wikipedia.org/wiki/Equation
3. 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

Suggested Theory distribution:

The suggested theory distribution as per Bloom's taxonomy is as per 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	Understand	Apply	Analyse	Evaluate	Create
30%	30%	30%	10%	---	---

Instructional Method:

a. 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.

b. The internal evaluation will be done on the basis of continuous evaluation of students in the class-rooms