



**Semester – II**

**Subject Name: Mathematics II**

**Subject Code: 09MA1102**

**Diploma Branches in which this subject is offered:** All Branch

**Objective:** Students are intended to understand the basic concepts and principles of Mathematics such as algebra, mensuration and trigonometry. 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 algebra, mensuration, trigonometry or suitable Mathematical tool to solve given engineering problems.

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

- Operate, simplify and evaluate algebraic expressions
- Solve simple problems on algebraic expressions and equations using algebraic skills.
- Perform the four fundamental operations on algebraic expressions.
- Find the perimeter of closed plane figures and area of rectangle and square
- Compute for the surface areas and volumes of different types of solids
- Identify faces Surfaces, edges and corners of solid objects and construct the net of solid objects.
- Define and evaluate each of the six trigonometric functions.
- Prove trigonometric functions.
- Solve problems involving oblique triangles by the use of the sine and cosine laws.

**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	4	0	4	50	30	20	25	25	150



**Contents**

<b>Unit</b>	<b>Topics</b>	<b>Lab Hours</b>	<b>Lecture Hours</b>
<b>1</b>	<b>Algebra</b> 1. Introduction 2. Polynomial in one variable 3. Addition, Subtraction of Polynomial 4. Multiplication, Division of Polynomial 5. Algebraic Identities 6. Linear Equations in Two Variables 7. Graphical Method of solving of Two Variables 8. Substitution Method of solving of Two Variables 9. Elimination Method of solving of Two Variables 10. Cross- Multiplication Method of solving of Two Variables	<b>12</b>	<b>8</b>
<b>2</b>	<b>Area, Surface area and Volume</b> 1. Area and perimeter of square and Rectangle 2. Area and perimeter parallelogram and triangle 3. Area and perimeter circle and semi circle 4. Surface area of solids – cube, cuboids, cylinder and Sphere 5. Volume of solids – cube, cuboids, cylinder and Sphere	<b>12</b>	<b>8</b>
<b>3</b>	<b>Trigonometry</b> 1. Introduction 2. Trigonometric Ratios 3. Trigonometric Ratios of Some Specific Angles 4. Trigonometric Ratios of Complementary Angles 5. Trigonometric Identities.	<b>12</b>	<b>8</b>
<b>Total</b>		<b>36</b>	<b>24</b>



**List of Tutorials:**

	<b>LAB HOURS</b>
<b>Unit 1 : Algebra</b>	
Polynomial in one variable	2
Addition, Subtraction of Polynomial	2
Multiplication, Division of Polynomial	2
Algebraic Identities	4
Linear Equations in Two Variables	2
Graphical Method of solving of Two Variables	2
Substitution Method of solving of Two Variables	2
Elimination Method of solving of Two Variables	2
Cross- Multiplication Method of solving of Two Variables	2
<b>Unit 2 : Area, Surface area and Volume</b>	
Area and perimeter of square and Rectangle	2
Area and perimeter parallelogram and triangle	2
Area and perimeter circle and semi circle	2
Surface area of solids – cube, cuboids, cylinder and Sphere	4
Volume of solids – cube, cuboids, cylinder and Sphere	4
<b>Unit 3 : Trigonometry</b>	
Trigonometric Ratios	2
Trigonometric Ratios of Some Specific Angles	2
Trigonometric Ratios of Complementary Angles	4
Trigonometric Identities.	4
<b>TOTAL</b>	<b>48</b>

**References Links:**

1. <http://study.com/academi/lesson>
2. [http://mathforum.org/library/drmath/sets/mid\\_ratio.html](http://mathforum.org/library/drmath/sets/mid_ratio.html)
3. <http://www.homeschoolmath.net/teching/proportions.php>



**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

<b>Distribution of Theory for course delivery and evaluation</b>					
Remember	Understand	Apply	Analyze	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