Course Name : Computer Engineering Group **Course code:** CO/CM/IF/CD

Semester : Third

Subject Title : Applied Mathematics **Subject Code:** 9035

Teaching and examination scheme:

Teaching Scheme			Examination Scheme						
TH	TU	PR	PAPER HRS	TH	TEST	PR	OR	TW	TOTAL
03	--	-	03	80	20	-	-	-	100

Rationale:

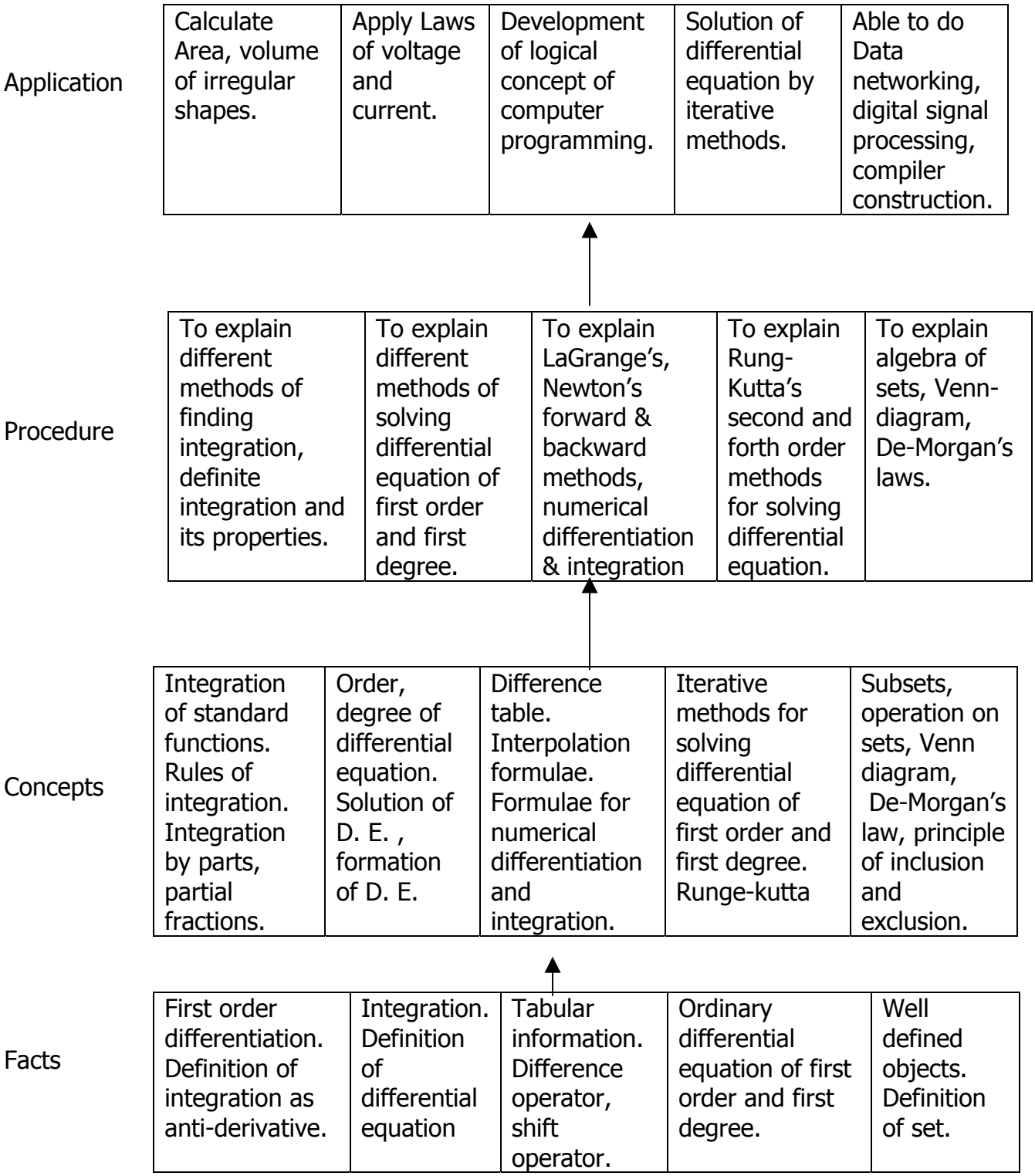
The study of mathematics is necessary to develop in the student the skills essential for new technological development. This subject introduces some applications of engineering, through which the student can understand the link of Mathematics with engineering principles.

Objective:

The Student will be able to:

1. Acquire knowledge of Mathematical term, concept, principals, and different methods.
2. Develop ability to apply Mathematical methods to solve technical
3. Solve problems, execute management plans with precision.
4. Acquire sufficient Mathematical techniques necessary for daily and practical problems.
5. Understand relation between Mathematics and applications in engineering.

Learning Structure:



Contents: Theory

Chapter	Name of the Topic	Hours	Marks
01	**Integration** 1.1 Definition of integration as anti-derivative. Integration of standard function. 1.2 Rules of integration (Integrals of sum, difference, scalar multiplication). 1.3 Methods of Integration. 1.3.1 Integration by substitution 1.3.2 Integration of rational functions. 1.3.3 Integration by partial fractions. 1.3.4 Integration by trigonometric transformation. 1.3.5 Integration by parts. 1.4 Definite Integration. 1.4.1 Definition of definite integral. 1.4.2 Properties of definite integral with simple problems.	10	20
	1.5 **Applications of definite integrals.** 1.5.1 Area under the curve. 1.5.2 Area between two curves.	04	06
02	**Differential Equation** 2.1 Definition of differential equation, order and degree of differential equation. Formation of differential equation for function containing single constant. 2.2 Solution of differential equations of first order and first degree such as variable separable type, reducible to Variable separable, Homogeneous, Non-homogeneous, Exact, Linear and Bernoulli's equations. 2.3 **Applications of Differential equations.** 2.3.1 Laws of voltage and current related to EC, RC LRC Circuits.,	10	16
03	**Interpolation** **3.1 Interpolation** 3.1.1 Introduction, Lagrange's interpolation formula. 3.1.2 Difference operator, relation between them. Difference Table. 3.1.3 Newton's forward and backward difference interpolation formulae. 3.1.4 Concept of extrapolation.	08	12

	3.2 Numerical Differentiation & Integration. 3.2.1 Newton's forward and backward difference formulae for differentiation $\left(\frac{dy}{dx}, \frac{d^2y}{dx^2}\right)$ at any point and at $x = x_0 \text{ or } x_n$ 3.2.2 Numerical integration Trapezoidal rule and Simpson's 1/3 rd rule.	06	10
04	**Numerical Solution Of Ordinary Differential Equation** 4.1 Introduction. 4.2 Runge Kutta's 2nd and 4th order methods.	06	08
05	**Discrete Mathematics** 5.1 Relational algebra. 5.2 Sets, subsets (Venn diagram) Operation on sets, De-Morgan's laws. Principal of inclusion and exclusion with simple problems.	04	08
	Total	48	80

Learning Resources:

Books:

Sr. No.	Authors	Title	Publications
01	S. P. Deshpande	Mathematics for polytechnic	Pune Vidyarthi Griha Prakashan
02	Robert T. Smith	Calculus: single variable	Tata McGraw Hill
03	Murray R Spiegel	Advanced Mathematics for Engineers and Scientist	McGraw Hill
04	F. Ayres	Schaum outline of differential and integral calculus	Tata McGraw Hill
05	Frank Ayres	Differential Equation: SI Metric	Schaum Outline series.
06	B. S. Grewal	Higher Engineering Mathematics	Khanna Publication,
07	S. S. Sastry	Introductory Methods of Numerical analysis	Prentice Hall Of India
08	Chapra	Numerical methods for Engg. 4th ed.	Tata McGraw Hill
09	M. K. Jain & others	Numerical methods for scientific & engineering computations	Wiley Eastern
10	Colman, Busby and Ross	Discrete Mathematical structure	Prentice Hall of India