| Course Code EC 1 | ALLIED MATHEMATICS –I U23MAA11 | | Credits 3 |
|---|---|---|---|
| **Year & Semester: I YEAR & I SEMESTER** | **Course Category** | **ELECTIVE** | **Total:(L+T+P) Per week: 3+1= 4** |

**Course Objectives**

- To explore the fundamental concepts of Mathematics.
- To acquire knowledge about finding approximate rootsof the polynomial equations.
- To improve students' ability in applications of matrices and calculus.
- Students are exposed to understanding the concept of derivatives and their applications.
- To exposed on able and triple integrals and their applications.

| UNIT | Details | No. of Hours |
|---|---|---|
| I | **SOLUTIONS OF TRANSCENDENTAL AND ALGEBRAIC EQUATIONS**<br>Iteration method, Bisection method, Newton's method - RegulaFalsi method, Horner's method (without proof) (Simple problemsonly)<br>**Chapter1**<br>**Text Book 1** | **12** |
| II | **SOLUTIONS OF SIMULTANEOUSE QUATIONS**<br>Gauss Elimination method - Gauss Jordan method –GaussSeidel Iterative method - Gauss Jacobi method (Restricted tothree variablesonly)(Simpleproblemsonly)<br>**Chapter2**<br>**Text Book 1** | **12** |
| III | **MATRICES**<br>Characteristic equation of a square matrix– Eigen values andeigen vectors – Cayley – Hamilton theorem [without proof] – | |

| | | |
|---|---|---|
| | Verificationand computationofinversematrix.<br>**Chapter1-Sec– 1.1.1,1.1.2,1.2,1.4.3**<br>**Text Book 2** | **12** |
| **IV** | **DIFFERENTIAL CALCULUS**<br>n-th derivatives – Leibnitz theorem [without proof] andapplications– Jacobians–Curvatureand radius ofcurvatureinCartesian co-ordinatesand polar co-ordinates.<br>**Chapter2 Sec–2.7,4.1,4.1.1,4.2**<br>**Text Book 2** | **12** |
| **V** | **APPLICATION OF INTEGRATION**<br>Evaluation of double, triple integrals – Simple applications toarea,volume, and centroid.<br>**Chapter3 Sec-3.4,3.4.1,3.5.1,3.5.2,3.6**<br>**Text Book 2** | **12** |
| | **Total** | **60** |

| **Course Outcomes** | |
|---|---|
| CO | On completion of this course, students will able to |
| 1 | Find out the approximate roots of polynomial equations. |
| 2 | Develop the skills of finding roots of simultaneous equations |
| 3 | Demonstrate knowledge about matrices and their applications |
| 4 | Carryout calculations of problems related to curvature and radius of curvature. |
| 5 | Evaluate double and triple Integrals, and enabled to underst and the Applications of integration in real-life situations. |
| **Text Book** | |
| 1 | P. Kandasamy, K. Thilagavathy, Calculus of Finite differences & Numerical Analysis, S. Chand& CompanyLtd.,NewDelhi-55, 2003 |
| 2 | P. Duraipandian and Dr.S. Udayabaskaran, Allied Mathematics,VolI&II. Chennai: Muhil Publishers 1997. |
| **Reference Books** | |
| 1 | S.J. Venkatesan,"AlliedMathematics-I", SriKrishnaPublications,Chennai. |
| 2 | P.R. Vittal (2003),"AlliedMathematics",MarghamPublication,Chennai. |

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|---|---|
| 3 | A. Singaravelu, “NumericalMethods”, MeenakshiPublications. |
| **Web Resources** | |
| 1. | https://www.mathwarehouse.com/ |
| 2. | https://www.mathhelp.com/ |
| 3. | https://www.mathsisfun.com/ |

**Course Outcome:**

| On the successful course completion, students will be able to: | | Cognitive Level |
|---|---|---|
| CO1 | Find out the approximate roots of polynomial equations. | K1 |
| CO2 | Develop the skills of finding roots of simultaneous equations | K2 |
| CO3 | Demonstrate knowledge about matrices and their applications | K3 |
| CO4 | Carryout calculations of problems related to curvature and radius of curvature. | K4 |
| CO5 | Evaluate double and triple Integrals, and enabled to underst and the Applications of integration in real-life situations. | K4, K5 |

K1- Remember; K2- Understand; K3-Apply; K4- Analyse; K5- Evaluate; K6- Create

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes

| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | M | S | S | S | M | S | S | S | M | M |
| CO2 | M | M | S | M | S | M | S | M | M | S |
| CO3 | S | S | M | M | S | S | M | S | M | M |
| CO4 | S | M | M | S | M | M | S | S | M | M |
| CO5 | M | S | S | M | S | M | S | M | M | S |

*S-Strong; M-Medium; L-Low