| | | |
|---|---|---|
| **Programme** | **:** | **Diploma in ET**/CE/EE /ME/MT/CM/IT/DDGM |
| **Programme Code** | **:** | 01/02/**03**/04/05/06/07/08/**17**/21/22/**23**/24/26 |
| **Course** | **:** | **Applied Mathematics –II** |
| **Course Code** | **:** | **SC 182** |

**Teaching Scheme:**

| | **Hours /Week** | **Total Hours** |
|---|---|---|
| **Theory** | **03** | **48** |
| **Term Work /Tutorial** | **01** | **16** |

**Evaluation:**

| | **Progressive Assessment** | **Semester End Examination** | | | |
|---|---|---|---|---|---|
| | | **Theory** | **Practical** | **Oral** | **Term work** |
| **Duration** | **Two class tests of 60 minutes duration** | **3 Hrs** | **--** | **--** | **--** |
| **Marks** | **20** | **80** | **--** | **--** | **--** |

**Course Aim:**

This subject intends to teach students basic facts, concepts, principles and procedure of Mathematics as a tool to analyze Engineering problems and as such it lays down foundation for the understanding of engineering science and core technology subjects.

**Course Objectives:**

The students will be able to,

1. Under stand basic facts of Mathematics about the field of analysis of any Engineering problem.
2. Know the standard ways in which the problem can be approached.
3. Apply basic concepts to engineering problems.

**Course Contents:**

| Sr. No | Name | Periods | Marks |
|---|---|---|---|
| 1 | **FUNCTIONS AND LIMITS :** | **13** | **18** |
| | 1.1 Functions: Concept of functions, Types of functions; ( only definitions) | 03 | 06 |
| | 1.2 Limits: Concept of limits and limits of functions. (Algebraic, trigonometric, logarithmic and exponential.) | 10 | 12 |
| 2 | **DERIVATIVES:** | **16** | **24** |
| | 2.1 Definition of the derivative, derivatives of standard Functions. | 03 | 04 |
| | 2.2 Differentiation of sum, difference, product and quotient of two or more functions | 03 | 04 |
| | 2.3 Differentiation of composite, inverse, implicit functions. | 04 | 06 |
| | 2.4 Differentiation of parametric, exponential and logarithmic Functions. | 04 | 06 |
| | 2.5Successive differentiation. | 02 | 04 |
| 3 | **APPLICATIONS OF DERIVATIVES:** | **05** | **08** |
| | 3.1 Geometrical meaning of derivative ( Equations of tangents and Normals) | 03 | 04 |
| | 3.2 Maxima and minima of functions. | 02 | 04 |
| 4. | **VECTORS** | **06** | **14** |
| | 4.1 Definition of vector, position vector, Algebra of vectors (Equality, addition, subtraction and scalar multiplication) | 01 | 02 |
| | 4.2 Dot (Scalar) product with properties. | 02 | 04 |
| | 4.3 Vector (Cross) product with properties. | 02 | 04 |
| | 4.4 Workdone and moment of force about a point & line | 01 | 04 |
| 5. | **NUMERICAL METHODS** | **08** | **16** |
| | 5.1 Solution of algebraic equations : Bisection method, Regulafalsi method and Newton – Raphson method. | 04 | 08 |
| | 5.2 Solution of simultaneous equations containing 2 and 3 Unknowns : Gauss elimination method. Iterative methods- Gauss Seidal and Jacobi's method | 04 | 08 |
| | | **48** | **80** |

**(For Tutorials a batch of 20 students)**

**Reference Books:**

| Author | Title | Publisher |
|---|---|---|
| Vishwanath | Engineering Mathematics Vol.I | Satya Prakashan, New Delhi |
| S.P. Deshpande | Mathematic for polytechnic students I & II | Pune Vidyarthi Griha Prakashan |
| H.K. Dass | Mathematics for Engineering Vol-I | S.Chand and Company |
| Shantinarayan | Engineering Mathematics vol-I and II | S.Chand and Company |

**Learning Resources:** Chalk, Board etc.

**Specification Table:**

| Sr. No. | Topic | Cognitive Levels | | | Total |
|---|---|---|---|---|---|
| | | Knowledge | Comprehension | Application | |
| 1 | Function And Limits | 04 | 08 | 06 | 18 |
| 2 | Derivatives | 08 | 16 | 00 | 24 |
| 3 | Applications Of Derivatives | 00 | 00 | 08 | 08 |
| 4 | Vectors | 04 | 04 | 06 | 14 |
| 5 | Numerical Methods | 04 | 04 | 08 | 16 |
| | **Total** | **20** | **32** | **28** | **80** |

**Prepared by :**

| (V.B.Shinde) | (S.V.Chaudhari) | (R.N.Shikari) |
|---|---|---|
| **Lecturer in Mathematics** | **Member Secretary PBOS** | **Chairman PBOS** |