**Department of Mathematics**

**Lecture Plan (Engg. Maths-IV KAS-402)**

**w.e.f. 16-01-2020**

|  |  |  |
| --- | --- | --- |
| **Unit** | **Course Topics** | **No. of Lectures** |
| **Module 1: Partial Differential Equations** | Origin of Partial Differential EquationsLinear and Non Linear Partial Equations of first orderLagrange’s equations, Charpit’s methodCauchy’s method of charecteristicsSolution of Linear Partial Differential Equation of Higher order with constant coefficients Equations reducible to linear partial differential equations with constant coefficients | **1****1****2****2****3****3** |
| **Module 2: Application of Partial Differential Equations** | Classification of linear partial differential equation of second orderMethod of separation of variablesSolution of wave and heat conduction equation up to two dimensionLaplace equation in two dimensionEquations of Transmission lines |  **2** **2** **3** **2** **3** |
| **Module 3: Statistical Techniques -I** | Introduction, Mesures of central tendencyMoments and Moment generating functionSkewness and Kurtosis, Curve Fitting Method of least squqres Fitting of straight line, Fitting of second degree parabola, Exponential curvesCorrelation and Rank CorrelationRegression Analysis: Regression lines of y on x and x on y, regression coefficients and non linear regression | **1****2****2****3****2****3** |
| **Module 4: Statistical Techniques-II** | Probability and Distribution: Introduction, Addition and Multiplication law of probabilityConditional probability, Baye’s theoremRandom variables (Discrete and Continuous Random variable)**Probability mass function and Probability density function****Expectation and variance****Discrete and Continuous Probability distribution: Binomial, Poisson and Normal distribution** |  **1** **2** **2**  **3** **2** **3**  |
| **Module 5: Statistical Techniques-III** |  Sampling, Testing of Hypothesis and Statistical Quality Control: Introduction, Sampling Theory (Small and Large)Hypothesis, Alternative hypothesis, Null hypothesis, Testing a hypothesisLevel of significance, Confidence limits, Test of significance of difference of means**T-test, F-test and Chi-square test, One way Analysis of Variance (ANOVA)**, Statistical Quality Control (SQS), Control ChartsControl Charts for Variables (X and R Charts)Control Charts for Variables (p np and C charts)And their application | **1****1****3****3****2****2****1** |
|  | Total | **63** |