**Department of Mathematics**

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

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

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| **Unit** | **Course Topics** | **No. of Lectures** |
| **Module 1: Partial Differential Equations** | Origin of Partial Differential Equations  Linear and Non Linear Partial Equations of first order  Lagrange’s equations, Charpit’s method  Cauchy’s method of charecteristics  Solution 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 order  Method of separation of variables  Solution of wave and heat conduction equation up to two dimension  Laplace equation in two dimension  Equations of Transmission lines | **2**  **2**  **3**  **2**  **3** |
| **Module 3: Statistical Techniques -I** | Introduction, Mesures of central tendency  Moments and Moment generating function  Skewness and Kurtosis, Curve Fitting  Method of least squqres Fitting of straight line, Fitting of second degree parabola, Exponential curves  Correlation and Rank Correlation  Regression 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 probability  Conditional probability, Baye’s theorem  Random 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 hypothesis  Level 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 Charts  Control 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** |