**Course-25 Title: Mathematics-III**

**Course Code: MAT 211 Credit: 3.00 Contact Hour: 3 per week Total marks: 100**

**11.1 Rationale:** To be a computer Engineer one has to be expert about differential equations and Statistics.

**11.2 Objectives:**

1. To achieve knowledge for solvingdifferential equations and application of differential equations.
2. To know about *Statistics* and application of Statistics.

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| 11.3  Learning Outcomes | 11.4  Course Content | 11.5  Teaching Strategy/ Learning Experience | 11.6 Assessment Strategy |
| 1. Explain Differential equations, order and Degree, singular solution, particular solution 2. Find the solution of first order Differential equations by various methods | Formation of Differential equations, Degree and order of Differential equations, Solution of first order Differential equations by various methods | Lecture  Exercise | Assignment  Essay  Exercise  Short answer |
| 1. Find the solution of higher order Differential equations by various methods 2. Cauchy-Euler Differential equations | Solution of higher order ordinary Differential equations, Cauchy-Euler Differential equations | Lecture  Exercise | Assignment  Essay  Exercise  Short answer |
| 1. Solution System of first order Differential equation 2. Partial Differential equations, Classification of PDEs and their general solution. | System of first order Differential equation and their applications, Partial Differential equations, Classification of PDEs and their general solution. | Lecture  Exercise | Assignment  Essay  Exercise  Short answer |
| Explain probability distribution, Sampling distribution,  Test of hypothesis, Correlation, Regression,  Find the relation between Correlation and Regression  Write down the different measures of central tendency  Establish the relation between AM, GM, HM  Explain frequency distribution, Variable and attributes  Define Skewness, and Kurtosis  Solve Various types of problems using different measures of central tendency | Probability:  Probability theory, discrete and continuous probability distributions, sampling theory and estimation, test of hypothesis, regression and correlation analysis, analysis of variance, decision making using probabilities, decision trees, application of game theory.  Statistics:  Introduction and introductory concepts, Variable and Frequency distribution. Central tendency & its measures, Dispersion & its measures, nature and shape of frequency distribution, Probability and Probability Theory, Regression and correlation, Sampling and sample survey, Test of hypothesis. | Lecture  Exercise | Assignment  Essay  Exercise  Short answer |

**RECOMMENDED BOOKS AND PERIODICALS**

**References:**

1. Murray R. Spiegel : Statistics

2. Ahmed and Bhuiya : Methods of Statistics

3. Shil and Debnath : An Introduction to Theory of Statistics

4. Md. Abu Yusuf : Mathematical Method and tensor Analysis

5. Md. Abu Yusuf : Differential equations

6. Shapley L. Ross : Differential equations