**College of Engineering, Pune-5.**

**Department of Mathematics**

**( MA 15006) Statistical and Quantitative Methods in Planning I**

F.Y. B. Tech. Planning

Teaching Scheme Examination Scheme

Lectures : 3 hrs / week Internal Test 1: 20 marks

 Internal Test 2: 20 marks

 End Sem. Exam: 60 marks

**Objectives:** The basic necessity for the foundation of B. Tech. Planning being mathematics and statistics, the main aim is, to teach statistical methodologies & models, develop mathematical skills & enhance thinking power of students.

**Unit I : Statistical Survey and Data Collection**

Introduction and importance of statistics, types of data, methods of collecting primary data, drafting a questionnaire, methods of sampling, merits and limitations of sampling, sampling and non sampling errors. **[08 Hrs]**

**Unit II :** **Classification, tabulation and presentation of data**

Introduction, types of classification, formation of frequency distribution, tabulation of data, Types of tables, significance of diagrams and graphs, types of diagrams and graphs, graphs of frequency distribution. **[08 Hrs]**

**Unit III : Statistical Measures**

Measures of central tendency, arithmetic mean, median, mode, geometric mean and harmonic mean, measures of absolute dispersion, range, quartile deviation, average deviation, standard deviation, skewness and kurtosis. **[08 Hrs]**

**Unit IV :** **Correlation Analysis**

Introduction,significance, types, scatter diagram, Karl Pearson’s correlation coefficient, coefficient of correlation and probable error, coefficient of determination, properties of correlation coefficient, rank correlation coefficient. **[08 Hrs]**

**Unit V :** **Regression Analysis**

Introduction, uses of regression analysis, regression lines, regression equations, standard error of estimate. **[08 Hrs]**

**Text Book :**

* Statistical Methods by S.P. Gupta, Sultan Chand and Sons, (Latest Edition)

**Reference Book :**

* Probability and Statistics for Engineers and Scientists(8th Edition) by Ronald E. Walpole, Sharon L. Myers, Keying Ye, Pearson Education.

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**Outcomes :** Students will be able to

1. know and recall the core knowledge of the syllabus. ( To measure this outcome, questions may be of the type- define, identify, state, match, list, name etc.)
2. understand the concept. ( To measure this outcome, questions may be of the type- explain, describe, illustrate, evaluate, give examples, compute etc.)
3. analyze the problem and apply the appropriate concept. ( To measure this outcome, questions will be based on applications of core concepts)
4. give reasoning. ( To measure this outcome, questions may be of the type- true/false with justification, theoretical fill in the blanks, theoretical problems, prove implications or corollaries of theorems, etc.)
5. apply core concepts to new situations. ( To measure this outcome, some questions will be based on self-study topics and also comprehension of unseen passages.)