Programme outcome and Course Outcome of Department of Statistics.

PROGRAMME OUTCOME:

- o Upon completion of this programme student will have knowledge of
    - Statistical theory and techniques to analyze and model different real life data sets.
    - Statistical software such as, MINITAB, SPSS, SAS, R-environment.
- o Student can make carrier in different fields as, banks, multinational companies, insurance companies, pharmaceutical companies, business analytics etc. as well as government services as, UPSC, MPSC, RBI, ISS etc.
- o Student can pursue research degree in statistics form Indian as well as foreign universities.

Semester-I

Course Code: PSST 101
Course Title: Probability Theory
Outcome of the Course: After completing this course students will be able to :   • Use mathematical analysis to solve real life problem.   • Understand the basic concept of set theory.   • Apply laws in probability.

Course Code: PSST 102
Course Title: Linear Models
Outcome of the Course: After completing this course students will be able to :   • Understand elementary matrix theory to real life problem and to use in linear model to solve problems.   • Understand the basic theory of Analysis of Variance.   • understand the basic theory of Analysis of covariance   • Apply different ANOVA model in real life data.

Course Code: PSST 103
Course Title: Theory of Estimation
Outcome of the Course: After completing this course students will be able to :

- Compute estimate and estimator.
- Compute estimate by different methods of estimation.
- Understand the properties of estimator.
- Understand the concept of Bayes estimation and bootstrapping and their uses.

Course Code: PSST 104

Course Title: Sampling Theory

Outcome of the Course: After completing this course students will be able to :

- Understand different sampling methods.
- Apply different sampling methods to real world.
- Apply clustering sampling to real problems.

Semester-II

Course Code: PSST 201

Course Title: Distribution Theory

Outcome of the Course: After completing this course students will be able to :

- Identify continuous distribution and discrete distribution through Jordan decomposition theorem.
- Use of different distribution to real world problems.
- Understand the relation between distributions.

Course Code: PSST 202

Course Title: Regression Analysis

Outcome of the Course: After completing this course students will be able to :

- Understand the generalized and general linear models.
- Fit model for real life data.
- Check assumptions of model.
- Analyze categorical data.
- Identify the remedies of problem in multiple linear regression models.
- Prediction of real data.

Course Code: PSST 203

Course Title: Planning and Analysis of Experiment

Outcome of the Course: After completing this course students will be able to :

- Identify the most efficient design using properties and optimality conditions.
- Apply BIBD and split-plot design in appropriate situation.
- Analyze total and partial confounding.

Course Code: PSST 204

Course Title: Multivariate Analysis-II

Outcome of the Course: After completing this course students will be able to :

- . Analyze the multivariate data using matrix theory.
- Predict the model for multivariate variable.
- Analyze multiple dependent variables with independent variables.
- Predict and classification of data.

SEMESTER III

Course Code: PSST 301

Course Title: MULTIVARIATE ANALYSIS - II

Outcome of the Course: Upon completion of this course student will have knowledge of

- Data reduction and dimension reduction techniques.
- Clustering/grouping data.
- Analyzing multivariate real life data sets.

Course Code: PSST 302

Course Title: TESTING OF HYPOTHESES

Outcome of the Course: Upon completion of this course student will have knowledge of

- Fundamental concepts of testing of hypotheses.
- Formulation of statistical hypothesis in real life situations.
- Developing best test procedures to test the hypothesis.
- Obtaining best confidence sets of unknown parameters.
- Analyzing real life data by using different nonparametric test procedures.
- Measuring association between bivariate random variables.

Course Code: PSST 303

Course Title: PLANNING AND ANALYSIS OF EXPERIMENTS - II

Outcome of the Course: Upon completion of this course student will have knowledge of

- Statistical techniques of planning and designing of experiments.
- Analyzing, comparing and identifying significant factors in industrial data sets.

Course Code: PSSTE1 304

Course Title: FINANCIAL MATHEMATICS.

Outcome of the Course: Upon completion of this course student will have knowledge of

- Modern probability and statistics, essential to develop economic and finance theories/models.
- Testing of the validity of different theories/models.
- Forming effective monetary and fiscal policies and to develop pricing models for financial assets such as equities, bonds, currencies, and derivative securities.

Course Code: PSSTE2 304

Course Title: ELEMENTS OF DATA SCIENCE.

Outcomes of the Course: Upon completion of this course student will have knowledge of

- Extracting information from different big data sets.
- Dimension reduction and visualization of big data sets.
- Artificial intelligence and neural network.

Course Code: PSSTE3 304
Course Title: STATISTICAL PROCESS CONTROL
Outcomes of the Course: Upon completion of this course student will have knowledge of • Controlling quality of industrial products. • Optimization of output or yield of industrial process. • Statistical methodology to get rid of defects and improve operational efficiency. • Six sigma and ISO standard concepts.

Course Code: PSSTE4 304
Course Title: CATEGORICAL DATA ANALYSIS
Outcomes of the Course: Upon completion of this course student will have knowledge of • Concept of non-quantifiable data. • Modeling and analyzing real life data when response is non-quantifiable.

Course Code: PSSTE5 304
Course Title: MEASURE THEORY
Outcomes of the Course: Upon completion of this course student will have knowledge of • Mathematical concepts required for advanced probability theory.

SEMESTER IV

Course Code: PSST 401
Course Title: STOCHASTIC PROCESSES
Outcomes of the Course: Upon completion of this course student will have knowledge of • Fundamental concepts of dependent data sets. • Analyzing and interpreting financial, epidemiological, biological etc. data sets.

Course Code: PSST 402
Course Title: TIME SERIES ANALYSIS
Outcomes of the Course: Upon completion of this course student will have knowledge of

• Time dependent data sets.
• Concepts of modeling time dependent data sets and forecasting.

Course Code: PSST 403

Course Title: RELIABILITY AND SURVIVAL ANALYSIS

Outcomes of the Course: Upon completion of this course student will have knowledge of
• Lifetime data and its distribution.
• Modeling of such data sets.
• Computing expected lifetime.
• Identifying significant factors affecting lifetime.
• Computing reliability of different systems and its components.

Course Code: PSSTE1 404

Course Title: ADVANCED THEORY OF DESIGNS

Outcomes of the Course: Upon completion of this course student will have knowledge of
• Advanced statistical techniques of planning and designing of experiments.
• Optimization of output or yield of industrial process.
• Analyzing, comparing and identifying significant factors in industrial data sets.

Course Code: PSSTE2 404

Course Title: OPERATIONS RESEARCH

Outcomes of the Course: Upon completion of this course student will have knowledge of
• Finding optimum solution of linear and non-linear functions under constraints.
• Inventory management.
• Implementation of statistical techniques for providing efficient services.

Course Code: PSSTE3 404

Course Title: STATISTICAL DECISION THEORY

Outcomes of the Course: Upon completion of this course student will have knowledge of
• Formulating decision making problems.
• Providing best decision by minimizing loss and risk.

Course Code: PSSTE4 404
Course Title: STATISTICS IN INSURANCE
Outcomes of the Course: Upon completion of this course student will have knowledge of • Making assurance policies. • Computing premiums, interest rates and other financial indices.

Course Code: PSSTE5 404
Course Title: MODERN STATISTICAL INFERENCE.
Outcomes of the Course: Upon completion of this course student will have knowledge of • Modern statistical techniques of estimation of parameters associated with different real life data sets.