B.Sc. Dual Discipline

(Economics, Statistics)

Programme Specific Outcomes (PSO)

1. Provide specific knowledge of relevant mathematical, statistical and econometric methods and the ability to employ specific econometric model.
2. Equip students with skills to comprehend, analyse and evaluate economic situations by applying theoretical and practical knowledge.
3. Inculcate economic reasoning skills and the ability to act rationally with an informed awareness of socio-economic issues.
4. The foundation and motivation for exposure to statistical ideas. The students will acquire the ability to understand and apply theoretical knowledge to solve a wide range of problems
5. The students with the versatility to work effectively in a broad range of analytic, scientific, government, financial, health, technical and other positions
6. The skill to apply appropriate statistical methods and computing tools to carry out data analysis

Semester I

Course Title: Introductory Microeconomics

1. To introduce basic economic tools which enables an understanding of the working of the individual agents in the economy

2. To understand the functioning of the market forces and role of the government in market.

3. To analyse the impact of changes in Demand and Supply determinants.

4. To gain conceptual clarity of Consumer Behaviour coupled with the use of mathematical tools and reasoning.

Course Title: Macroeconomics I

1. To provide a basic understanding about the concepts of macroeconomics associated with the determination and measurement of aggregate macroeconomic aggregates.

2. To analyze the income determination under the Classical framework.

3. To understand the income determination under the Keynesian approach and operation of super multiplier.

4. To enable a deeper understanding of the concepts - money, inflation, productivity, unemployment and introduce to the simultaneous equilibrium in goods and money markets.

Course Title: Descriptive Statistics And Probability

1. Recognise different types of data and scales of measurement Visualise and understand the data through diagrams and graphs
2. Describe univariate data through appropriate measures and displays
3. Understand the nature of relationship between variables in bivariate data and describe it mathematically. Calculate and interpret simple linear correlation and regression coefficients
4. Express the probabilities of different types of event. Solve numerical problems involving addition, multiplication and Bayes' theorems. Evaluate probabilities of events from two way tables

Semester II

Course Title: **Intermediate Microeconomics**

1. To analyse the basic theories of production function and types of production costs.

2. To acquaint the students with behavior and objectives of firm. To study the structure of and determination of price and output under perfectly competitive market.

3. To evaluate the strategies and operation of firms under monopoly market with the help of mathematical reasoning

4. To understand the peculiar features, price and output determination under monopolistic and oligopoly market using the mathematical tools

Course Title: Macroeconomics II

1. To understand the income determination under the Keynesian IS-LM Approach.

2. To understand various alternative theories of output and employment determination and the role of policy in this context.

3. To enable a deeper understanding of the concept – business cycle, Inflation and Unemployment – Phillips curve. It also provides insights into modern business cycle analysis.

4. To give an insight into the theory and functioning of the macroeconomic policies. It helps the students to analyse the macroeconomic performance of various countries.

Course Title: Probability Distributions - I

1. Construct probability distributions of univariate and bivariate random variables and evaluate descriptive measures for the same.Understand the concept of moment generating function and its uses

2. Understand important theoretical distributions and their premise. Identify the appropriate theoretical probability distribution under different practical situations and calculate and interpret the probabilities including assistance from software

3. Use R software for basic statistical computing

Semester III

Course Title: **Factor Market And Welfare Economics**

1. To understand the concepts of factor market with reference to land and labour market

2. To familiarize the students with the theories of interest rate and profit.

3. To introduce students to the foundations and importance of welfare.

4. To strengthen understanding of welfare analysis under partial and general equilibrium framework.

Course Title: Public Economics

1. To familiarize students with the basic theoretical background of public economics

2. To provide an understanding of the two major tools of public finance

3. To get an insight into the relevance of public choices and government intervention for economic stability

Course Title: Probability Distributions - II

1. Evaluate the marginal and conditional probabilities in the context of bivariate normal variate Appreciate the need for truncated probability distribution

2. Describe the abstract idea of a sampling distribution and how it reflects the sample to sample variability of a statistic and explain how it is a measure of the precision of a point estimate the different exact sampling distributions – their genesis and properties

3. Understand and apply (i) Central Limit Theorem to problems involving sums and means of variables from arbitrary distributions (ii) Chebychev's inequality.

4. Differentiate between univariate and multivariate data, multiple and multivariate regression. Apply the knowledge of multiple regression and simple data mining techniques to real data (both manually and software)

Semester IV

Course Title: Financial Markets

1.To introduce the principles of finance and economics that explores the connection between financial market and the economy.

2. To familiarise financial market, financial derivatives and its operations

3. To comprehend how monetary forces operate through a multitude of channels - with special reference to India

4. To demonstrate the interfaces among regulatory bodies, financial market and financial institutions

Course Title: Financial Economics

1. To familiarise students with the working of financial markets, bond pricing and the effect of intertemporal choice in decision making.

2. To equip students with the technical skills to measure portfolio risks and returns.

3. To give the students an insight into the role and pricing strategies of derivatives.

Course Title: Statistical Inference – I

1. Understand the need for statistical inference; compute point estimates of the parameters of standard theoretical discrete and continuous distributions through different methods, investigate the properties of these estimator

2. Identify (i) the different types of hypotheses and two types of errors in different scenarios (ii) families of distributions that possess the monotone likelihood ratio(MLR) property

3. Construct most powerful, uniformly most powerful and likelihood ratio tests

4. Understand the meaning of order statistics, evaluate the probability function of rth, smallest and largest order statistics for different distributions

Semester V

Course Title: International Economics

1. To become familiar with the subject and its importance in world economy. Also, to be equipped with the pre-requisite tools for further study.

2. To introduce the students with the basic trade models and exchange pattern in single factor simple economy

3. To make the students understand the trade and exchange pattern in a more complex structure with two factors of production.

4. To introduce the restrictive commercial policies and its consequence, importance of foreign capital and International Economic Integration in international trade.

5. To understand the concept of BOP and its adjustment mechanism, basics of foreign exchange rate.

Course Title: Econometrics – I

1. To learn the basic pre requisite tools to understand the subject.

2. To understand two variable regression model, estimation of the parameter and to understand the desirable properties of a parameter

3. To learn regression in a more complex framework, when number of variables goes beyond two

4. To be able to comprehend the usage of other extended forms form regression model

5. To diagnose the consequences of relaxing assumptions of CLRM and to find out it's remedies while encounter with such issues.

Course Title: Risk Management and Insurance

1. To familiarise students with the role of risk, insurance and information asymmetry in making investment decisions.

2. To provide students with the knowledge of risk management techniques and equip them with technical skills to forecast losses in investment.

3. To give students an insight into the varieties of Insurances and their working.

4. To equip students with the knowledge and techniques involved in Insurance pricing.

Semester V

Course Title: Theory Paper VST5: Sampling Theory And Tests Of Significance

1. Identify the population of interest, individuals, parameter, sample and statistics from Study Design a questionnaire, Carry out a small scale sample survey. Differentiate between (i) different methods of drawing samples (ii) the accuracy and precision of estimates.

2. Evaluate (i) the mean and standard error of the estimates under simple, stratified and systematic random sampling (ii) the confidence interval of the parameters, compare the best method of sampling.

3. Identify the appropriate statistical tests to be employed in a study. Execute tests of significance for commonly used hypotheses including the assistance of software. Use p value to draw conclusion

Course Title: Design Of Experiments And Nonparametric Tests

1. To recognise the situation in which analysis of variance (ANOVA) is appropriate and be able to perform one-way and two-way ANOVA including computer aided analysis.

2. Identify features common in experiments, like the experimental unit, treatment, factors, control groups, randomisation and blocking; Understand the importance of statistical design of experiments and its benefits, Choose an appropriate experimental design based on the study objectives; Design, conduct, analyse and interpret experimental data

3. Identify applications where nonparametric approaches are appropriate; Demonstrate the conduct of important non-parametric tests