St. Xavier's College (Autonomous), Ahmedabad
FACULTY OF ARTS
DEPARTMENT OF ECONOMICS (SF)
BA. Hons. (Economics) SF
SEMESTER-4

Minor Course: Statistics for Economics-3

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credit Distribution of The Course			Eligibility Criteria	Pre-requisite(s) of the Course (if any)
	Lectures	Tutorial	Practical / Practice		
Statistics for Economics-3 (ECH-4101)	4	0	0	10 + 2 from a recognized board in any stream	Previous Semesters

LO:
1 Understand probability distributions, random variables, and fundamental concepts of statistical inference used in economic and social science analysis
2 Explain experimental methods, causal estimation techniques, and the statistical properties of estimators for empirical research

CO:
1 Apply probability distributions, estimation, and hypothesis testing techniques to analyze data and draw valid statistical inferences
2 Analyze causal relationships and evaluate estimators based on properties such as unbiasedness, efficiency, consistency, and asymptotic behavior

UNIT 1: Probability Distributions-2

Random variables, probability distributions, discrete random variables, continuous random variables, expected values, ~ mean, variance, standard deviation, distribution shape, joint distributions, marginal distributions, conditional distributions, independence, covariance, correlation, sums of random variables, normal distribution, chi-squared distribution, t distribution, F distribution

UNIT 2: Basic Statistical Inference

Random sampling, sampling distribution of sample average, large-sample approximations, law of large numbers, consistency, central limit theorem, estimation of population mean, properties of estimators, sample variance, sample standard deviation, standard error, hypothesis testing, null hypothesis, alternative hypothesis, p-value, t-statistic, one-sided tests, significance level, confidence intervals, comparing means, difference between two means

UNIT 3: Experimental Methods and Causal Estimation

Differences-in-means estimation, causal effects using experimental data, causal effect as difference in conditional expectations, t-statistic in small samples, student t distribution, scatterplots, sample covariance, sample correlation

UNIT 4: Statistical Properties of Estimators

Population parameters, random sampling concepts, unbiasedness, sampling variance of estimators, efficiency of estimators, consistency, asymptotic normality, interval estimation, confidence intervals for means, hypothesis testing fundamentals, asymptotic tests, p-values, relationship between confidence intervals and hypothesis testing, practical vs statistical significance, notation conventions

Textbook:

- Appendix Section- Wooldridge (Introduction to Econometrics)
- Review Section- Stock & Watson (Introduction to Econometrics)

Suggestive Reading

1. Anderson, D. R., Sweeney, D. J., Williams, T. A., Camm, J. D., Cochran, J. J., Fry, M. J., & Ohlmann, J. W. (2020). Statistics for business & economics (14th ed.). Cengage Learning.
2. Larsen, R.J. and M.J. Marx (2017) – An Introduction to Mathematical Statistics and Its Applications, Pearson Education, 6th edition.
3. Wackerly, D., Mendenhall, W., & Scheaffer, R. (2014) – Mathematical Statistics with Applications, Cengage Learning, 7th edition.
4. Hogg, R. V., Tanis, E. A., & Zimmerman, D. L. (2018) – Probability and Statistical Inference, Pearson, 10th edition.
5. Casella, G., & Berger, R. L. (2002) – Statistical Inference, Duxbury Press, 2nd edition.

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FACULTY OF ARTS
DEPARTMENT OF ECONOMICS (SF)
BA. Hons. (Economics) SF
SEMESTER-4

Minor Course: Principles of Economics-3

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credit Distribution of The Course			Eligibility Criteria	Pre-requisite(s) of the Course (if any)
	Lectures	Tutorial	Practical / Practice		
Principles of Economics-3	4	0	0	10 + 2 from a recognized board in any stream	Previous Semesters

LO:

Understand how national income, price levels, and economic growth are measured to evaluate the overall performance of an economy.

Analyse the relationships between savings, investment, productivity, and long-term economic development using key macroeconomic indicators.

CO:

Apply macroeconomic measurement tools such as GDP, CPI, and the GDP deflator to assess economic welfare and cost of living.

Evaluate the determinants of growth, productivity, and the role of financial systems and policies in promoting economic stability.

Unit–1: Measuring a Nation's Income:

The Economy's Income and Expenditure, The Measurement of GDP, GDP as the Market Value of All Final Goods and Services Produced within a Country in a Given Period, Other Measures of Income, The Components of GDP—Consumption, Investment, Government Purchases, Net Exports, Real versus Nominal GDP, GDP

Deflator, Case Studies on Real GDP, GDP and Economic Well-Being, International Differences in GDP and Quality of Life.

Unit–2: Measuring the Cost of Living:

The Consumer Price Index, Calculation of CPI, Contents of the CPI Basket, Problems in Measuring the Cost of Living, GDP Deflator versus CPI, Correcting Economic Variables for Inflation, Dollar Figures from Different Times, Indexation, Real and Nominal Interest Rates, Regional Differences in Cost of Living, Interest Rates in the U.S. Economy.

Unit–3: Production and Growth:

Economic Growth around the World, Productivity and Its Determinants, Importance of Productivity, The Production Function, Natural Resources and Growth, Economic Growth and Public Policy, Saving and Investment, Diminishing Returns and the Catch-Up Effect, Investment from Abroad, Education, Health and Nutrition, Property Rights and Political Stability, Free Trade, Research and Development, Population Growth, Innovation and Growth, Causes of Poverty in Africa, American Prosperity.

Unit–4: Saving, Investment, and the Financial System:

Financial Institutions in the U.S. Economy, Financial Markets and Intermediaries, National Income Accounts—Saving and Investment Identities, The Meaning of Saving and Investment, Market for Loanable Funds, Supply and Demand for Loanable Funds, Saving Incentives, Investment Incentives, Government Budget Deficits and Surpluses, Fiscal Policy and Saving, History of U.S. Government Debt, Financial Crises, Decline in Real Interest Rates, Role of Financial System in Economic Growth.

Textbook:

- Principles of Economics- Mankiw (10th ed.)

Suggestive Reading

1. Principles of Economics – Mankiw (10th ed.), Economics – Samuelson & Nordhaus (19th ed.)

2. Principles of Economics – Case, Fair & Oster (13th ed.)

3. Principles of Microeconomics – Stiglitz & Walsh (2nd ed.)