

M. Com. Part I (Semester II)

Compulsory Subject

Subject Name :- Business Statistics Course code :- 102B-II

Objective of the Program

The main objective of this course is to acquaint students with some basic concepts in Statistics. They will be introduced to some statistical methods of analysis of data. The unit wise objectives of this course are as follows:

- 1) To forecasting and the analysis of economic and industrial time series.
- 2) Providing students with a formal treatment of probability theory and fostering understanding through real-world applications.
- 3) To understand the topics binomial, Poisson and normal distribution and of importance in different disciplines.
- 4) To take a random sample from the population to obtain parameter estimates.
- 5) To learn how to interpret the result of a test of hypothesis in the context of the original narrated situation.

Unit No.	Unit Title	Contents	Purpose Skills to be developed
1	Time Series	Introduction, Definition, Components of Time Series, The Trend, Seasonal variation, Cyclical variation, Irregular variation, Methods of estimating Trends, Moving averages (with periods 3,4,5), Fitting of trendline and second degree curve, Exponential smoothing, Example and problem	Time series analysis is the collection of data of specific intervals over a period of time with the purpose of identifying trends, cycles and seasonal variations to aid in the forecasting of future events.
2	Theory of Probability Distributions : Discrete and Continuous	1.1 Random Variables, discrete random variable, continuous random Variable 1.2 Probability distribution and probability mass function (p.m.f.) of discrete random variable, Probability density function (p.d.f.) of continuous random variable 1.3 Expected value, variance and standard deviation	To classify probability distributions as discrete or as continuous probability distributions depending on whether they define probabilities associated with discrete variables or continuous variables. Examples will clarify the difference between discrete and continuous variables.

		<p>1.4 Marginal, Joint and Conditional distribution</p> <p>1.5 Numerical Problems on finding p.m.f/p.d.f, expected value and variance</p>	
3	Standard Probability Distributions and Parameter Estimation	<p>2.1 Binomial Distribution : p. m. f., mean and variance.</p> <p>2.2 Poisson Distribution : p. m. f., mean and variance</p> <p>2.3 Normal Distribution : p. m. f., mean, variance, properties</p> <p>2.4 Exponential distribution : definition, mean, variance and properties</p> <p>2.5 Limiting relations between these distributions</p> <p>2.6 Numerical problems to calculate probabilities, mean and Variance</p>	<p>Probability distributions are prevalent in many sectors namely insurance, social science, computer science etc. This topic highlighted standard probability distributions which are observed in day-to-day life and explain their applications.</p>
		<p>3.1 Parameter and Statistic</p> <p>3.2 Unbiased estimator</p> <p>3.3 Confidence interval (around unbiased estimator)</p> <p>3.4 Examples and Problems on real life situations</p>	<p>Parameters are descriptive measures of an entire population that may be used as inputs to generate distribution curves. One goal of statistical analysis is to obtain estimates of population parameters along with the amount of error associated with these estimates.</p>
4	Tests of Hypothesis	<p>3.1 Hypothesis, null and alternative hypothesis, two types of errors, teststatistic, critical region acceptance region, level of significance, p-value</p> <p>3.2 Chi square test for goodness of fit</p> <p>3.3 Chi square test for independence of two attributes</p>	<p>The purpose of this topic is to determine whether there is enough statistical evidence in favor of certain belief about the parameter.</p> <p>To learn how to apply the test procedure for test of hypothesis concerning a population mean whom the sample size is small.</p> <p>Larger sample sizes allow researchers to better</p>

	<p>3.4 Small Sample Tests</p> <ul style="list-style-type: none"> a) One sample test b) Two sample test c) Paired t – test d) F- test <p>3.5 Large sample tests for population mean and population proportion</p> <p>3.1.1 Test for the mean a) one sample b) two samples</p> <p>3.1.2 Test for the proportion a) one sample b) two samples</p> <p>3.6 Numerical Problems</p>	<p>determine the average values of their data and avoid errors.</p>
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