EXTENDED LECTURE OUTLINE

AST6 312 **Applied Business Statistics** **(1+1)**

THEORY CLASSES

SL. No	Topic/lesson
	Introduction to Sampling Theory
1	Introduction to Sampling Theory: Basic definition and terminologies like population, sample, parameter, statistic, estimation and other basic terminologies related to sampling theory, importance of sampling, when sampling will be done?.
2	Sampling versus complete enumeration: definition, meaning, difference between sampling and complete enumeration, advantages and disadvantages for both.
3	Method of Sampling: mentioned different types of sampling methods a) Non Probability sampling method b) probability sampling method, basic difference between these methods and its practical utility.
4	Non Probability sampling methods: meaning, advantages over probability sampling methods, different types of non probability sampling methods like judgment sampling its meaning, methodology and practical utility, Convenience sampling its meaning, methodology and practical utility, Quota sampling its meaning, methodology and practical utility and accident sampling scheme.
5	Probability Sampling methods: meaning, advantages over non probability sampling methods, different types of probability sampling methods
6	Simple Random Sampling (SRS): meaning, definition, concept, practical utility, situations suitable for SRS, different methods of selecting a random numbers like using random number tables, using lottery method. Advantages and disadvantages of SRS, application of SRS.
7	Stratified sampling techniques: meaning, definition, concept and basic terminologies like strata, sub strata, advantages of Stratified sampling techniques, determining sample size for simple random and stratified sampling. Allocation of samples over different strata like Equal allocation, proportional allocation, Nyman's allocation and optimal allocations.
8	Systematic sampling: meaning, definition, concept, practical utility, situations suitable for systematic sampling, advantages of systematic sampling.
9	Cluster sampling: meaning, definition, concept, practical utility, situations suitable for cluster sampling, advantages of cluster sampling. Difference between strata and cluster.
10	Multistage sampling techniques (Two stage sampling): meaning, definition, concept, practical utility, situations suitable for multistage sampling, advantages of multistage sampling technique.
	Time Series Analysis
11	Introduction to Time series analysis: Basic definition, terminologies and concepts
12	Different types of data set in time series analysis like spatial, temporal and conditional series and their characteristics

13	Components of Time series viz Trend: meaning, definition, concept, identification of trends.
14	Seasonal variations in time series data: meaning, definition, concept, identification of trends.
15	Cyclic and irregular components of time series meaning, definition, concept, identification of trends.
16	Different types of Measurement of trend components: Graphical method, semi average methods, moving average method and central moving averages for each methods meaning, definition, methodology and detection of trends.
17	Isolation of trend methods: meaning, concept, purpose methodology through moving averages method, ordinary least squares methods.
18	Fitting of trend: meaning, purpose and methodology
	Index Number
19	Index number: concept and definition, objectives of index numbers
20	Advantages and limitations of index numbers, characteristics of index numbers
21	Types of index numbers: Price index numbers, Quantity index numbers, value index numbers and its constructional steps
22	Methods of constructions of index numbers: simple or unweighted index numbers and weighted index numbers
23	Consumer price index number (CPI) or cost of living index numbers (CLI): definition, steps involved in the construction of these index numbers.
	Statistical Quality Control (SQC)
24	Definition, application of different charts, advantages of SQC
25	Statistical process control (SPC) and Acceptance sampling (Product control), variation due to chance causes and assignable causes
26	Construction of control charts, control charts for variables and control charts for attributes interpretation of control charts.
27	Acceptance sampling (product control): meaning, advantages and disadvantages: single sampling plan (SSP), Double sampling plan (DSP)