	L21C05	Business Statistics	L	T	P	J	S	C	
			3			.		3	
	Course owner	Dept.of Operations	Syllabus version				1.0		
	Course Pre-requisite(s)	NIL	Contact hours				60		
	Course Co-requisite(s)	NIL	Date Approved						
	Alternate Exposure								

This course aims at aiding the students in reaching a level of increased competence in business statistics and expands understanding of the applications of statistical concepts in business. Emphasis is placed upon learning statistical concepts through common business problems.

Course objectives:

1. Gain conceptual and working knowledge of Business Statistics and use it in the applications of business.
2. Learn the methods of solving problems on basic concepts and analytical business statistical model.
3. Enable students to access the relationship between two variables
4. Understanding of Indices and how to build them.
5. Enable the student to use introductory level of Transportation and queuing theory.

UNIT - I Data collection and Measures of Central Tendency No of Hours: 13

Collection and Presentation of Data Statistical data – Primary and Secondary; Methods of collection of Primary data; Presentation of Data – Textual, Tabular and Diagrammatic form (Line chart, Bar chart, Pie chart, Histogram, Frequency polygon and Ogive); Frequency distribution.

Measures of Central Tendency – Mean (A.M.,G.M.,H.M.), Median, Mode – different properties; Partition values – Quartiles, Deciles, Percentiles; Partion values from Ogives.

Measures of Dispersion – Range, Q.D., M.D., S.D. – their coefficients; comparing consistency; Different properties. Moments, Skewness and Kurtosis – Moments about an arbitrary number; Central Moments; Relation between central and non- central moments up to 4th order 2 3 and – coefficients.

Learning Outcome:

After completion of this unit, the student will be able to

- Describe data collection process L2
- Use techniques of organizing data in tabular and graphical forms to enhance data analysis and interpretation L3
- Use several numerical methods belonging to measures of central tendency and measures of dispersion to describe the characteristics of a data set L4
- Explain the properties and relationship between moments, skewness and kurtosis L2

Pedagogy tools: Blended learning, self-reading, flipped classroom

UNIT - II Correlation Analysis No of Hours: 10

Methods of Studying Correlation for Grouped and Ungrouped Frequency Distribution.


Regression Analysis: Equation of Regression Lines for Grouped and Ungrouped Frequency Distribution, Standard Error of Estimate.

Learning Outcome:

After completion of this unit, the student will be able to

- Explain how correlation analysis describes the degree to which two variables are linearly related to each other. L2
- Use regression analysis to estimate the relationship between two variables L3
- Apply correlation and regression analysis techniques to grouped and ungrouped frequency distribution. L3
- Calculate standard error of estimate L4

Pedagogy tools: Blended learning, self-reading, flipped classroom

	L21C05	Business Statistics	L	T	P	J	S	C	
			4					4	
	Course owner	Dept.of Operations	Syllabus version				1.0		
	Course Pre-requisite(s)	NIL	Contact hours				60		
	Course Co-requisite(s)	NIL	Date Approved						
	Alternate Exposure								

UNIT - III Index Number

No of Hours: 15

Construction, Price and Quantity index numbers, Laspeyres', Paasche's, Edgeworth- Marshall's, Fisher's method, Relative methods, Tests of index number formulae: Time and Factor reversal tests, General index number, Chain base index number, Cost of living index number (CLI), Uses of CLI and its applications, Uses and limitations of index numbers.

Analysis of Time Series - Components of a time series, Adjustment in time series, Measurement of trend by moving average and least squares methods (linear and quadratic trends), Measurement of seasonal variation by simple average method, Forecasting, De-seasonalisation.

Learning Outcome:

After completion of this unit, the student will be able to

- Explain how to calculate various kinds of index numbers L2
- Illustrate the uses and limitations of index numbers L2
- Understand the four components of a time series L2
- Evaluate the measurement of trend by various forecasting techniques L5

Pedagogy tools: Blended learning, self-reading, flipped classroom

UNIT - IV Transportation and Assignment Problems

No of Hours: 12

Nature and scope of transportation and allocation models, different methods for finding initial solution N-W Corner Rule, Least Cost Method and VAM. Unbalanced TP, Test for optimality – MODI method, AP a variant of Transportation model, Hungarian method, Restricted Assignment problems.

Queuing Theory – Models – Simple Problem – Introduction to simulation

Learning Outcome:

After completion of this unit, the student will be able to

- Solve initial feasible solution for transportation problems using several methods and optimal solution using MODI method L4
- Determine how to solve assignment problems using Hungarian method L3
- Handle unbalanced transportation and assignment problems L5
- Analyse situations that generate queuing problems L4
- Understand the basic concepts of simulation L2

Pedagogy tools: Blended learning, self-reading, flipped classroom

UNIT - V Probability and Sampling


No of Hours: 10

Probability theory–concept and approaches; Probability rules – addition and multiplication theorem, Binomial, Poisson and Normal Distribution and their applications. Sampling–Purpose and Methods of Sampling, Merits and limitations of Sampling.

Learning Outcome:

After completion of this unit, the student will be able to

- Understand fundamentals of probability and various probability rules that help them to measure uncertainty involving uncertainty. L2

	L21C05	Business Statistics	L	T	P	J	S	C	
			4					4	
	Course owner	Dept.of Operations	Syllabus version				1.0		
	Course Pre-requisite(s)	NIL	Contact hours				60		
	Course Co-requisite(s)	NIL	Date Approved						
	Alternate Exposure								

- Analyse the uses of each probability distribution and how to find its values L4
- Explain the merits and limitations of sampling L2

Pedagogy tools: Blended learning, self-reading, flipped classroom

Textbook(s):

- Gupta and Gupta, Business Statistics. (Sultan Chand & Sons: New Delhi).

Additional Reading

Reference Book(s):

- Chandan, J. Statistics for Business Economics. (Vikas: New Delhi)
- Sharma, Shenoy and Srivastava, Quantitative Analysis for Managerial Decision Making

Journal(s):

- The Annals of Statistics, publisher Institute of Mathematical Statistics
- Australian and New Zealand Journal of Statistics, Wiley-Blackwell Publishing

Website(s)

- <https://sites.google.com/site/indianstatisticalassociation/Home>
- <https://statsoc.org.au/>

	Programme Objectives (POs)												PSOs			
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	
CO1	1	1	1	1	1	1										
CO2	1	2	1	2	2	2										
CO3	3	1	2	1	1	3										
CO4	1	1	1	3	3	1										
CO5	1	1	1	1	1	3										

1-Low, 2- Medium and 3- High Correlation