

**Semester** : I  
**Course Title** : Decision Sciences  
**No of Credits** : 4  
**Contact Hours** : 40 hrs

Course Outcomes	Description	Cognition	Hours	Evaluation Tools
CO1	Understand the various statistical concepts used in Decision Science	L2: Understand	7.0	<u>Internal</u> Quiz, Test <u>End Term-</u> <u>Theory</u>
CO2	Illustrate the use of statistical concepts to solve business problems	L3: Apply	7.5	<u>Internal-</u> Assignments, project work, Viva <u>End Term-</u> <u>Sums</u>
CO3	Analyze the statistical information for business decision making	L4: Analyze	9.0	<u>Internal-</u> Assignment Viva project work <u>End Term-</u> <u>Sums</u>
CO4	Assess the tools & techniques used in decision making for its appropriateness	L5: Evaluate	5.5	<u>Internal</u> <u>Project work</u> <u>End term-</u> <u>Sums</u>
CO5	Develop suitable statistical models for business decision making	L6: Create	3.0	<u>Internal</u> <u>Project work</u>  <u>End term</u> <u>sums</u>

### Mapping with CO-PO

1 – Low, 2 – Medium, 3 – High, 0 – Low

COs / Pos	PO 1	PO 2	PO 3	PO 4	PO 5
CO1	3	2	-	-	-
CO2	2	3	-	1	-
CO3	3	3	2	1	2
CO4	3	3	2	2	2
CO5	3	3	2	2	2
CO	2.8	2.8	2	1.5	2

### Session Plan

Sr. No	Hrs	Topic	COs	Cognition	Evaluation Tools
<b>1</b>	<b>1</b>	<b>Introduction to Decision Sciences</b>			
(i)	1	Meaning and Importance of Decision Science	CO1: Understand the various statistical concepts used in Decision Science	L2: Understand	<u>Internal - Test</u>
<b>2</b>	<b>2.0</b>	<b>Representation of Data</b>			
(i)	2	Frequency Distribution Charts, tables and diagrams.	CO2: Illustrate the use of statistical concepts to solve business problems	L3: Apply	<u>Internal- Practical, project work</u>
<b>3</b>	<b>3.5</b>	<b>Measures of Central Tendency</b>			
(i)	.5	Various concepts related to measures of central tendency	CO1: Understand the various statistical concepts used in Decision Science	L2: Understand	<u>Internal- Class Test, Viva, Project work</u>
(ii)	3.0	Practical application on various datasets	CO2: Illustrate the use of statistical concepts to solve business problems	L3: Apply	<u>Internal -Practical, Class test</u>

<b>4</b>	<b>2.5</b>	<b>Measures of Dispersion</b>			
(i)	.5	Various concepts related with measures of dispersion	CO1: Understand the various statistical concepts used in Decision Science	L2 : Understand	<u>Internal-Test, Viva, Practical</u>
(ii)	2	Sums related to dispersion	CO3: Analyze the statistical information for business decision making	L4: Analyse	<u>Internal - Project work, Test</u>
<b>5</b>	<b>1.5</b>	<b>Measures of Symmetry</b>			
(i)	.5	Various concepts related to skewness, moments and Kurtosis	CO1 : Understand the various statistical concepts used in Decision Science	L2 : Understand	<u>Internal-Test, Viva</u>
(ii)	1	Sums related to Skewness and Kurtosis	CO3 : Analyze the statistical information for business decision making	L4: Analyse	<u>Internal - Project work</u>
<b>6</b>	<b>3.5</b>	<b>Probability &amp; its Distributions</b>			
(i)	1	The various concepts related with probability	CO1: Understand the various statistical concepts used in Decision Science	L2: Understand	<u>Internal-Viva Test, End Term-Theory</u>
(ii)	1	Discrete and Continuous Frequency Distribution: Calculation of Binomial, Poisson and Normal Distribution	CO2 : Illustrate the use of statistical concepts to solve business problems	L3: Apply	<u>Internal-Test, Practical End Term-Sums</u>
(iii)	1.5	Discrete and Continuous Frequency Distribution: Application of Binomial, Poisson and Normal Distribution.	CO3 : Analyze the statistical information for business decision making	L4: Analyse	<u>Internal-Viva, Test, End Term-Theory</u>
<b>7</b>	<b>1.0</b>	<b>Theory of estimation</b>			
(i)	.5	Various concepts related with theory of estimation	CO1: Understand the various statistical concepts used in Decision Science	L2: Understand	<u>Internal-Test, Viva Practical End Term-Sums, Theory</u>
(ii)	.5	Calculation of point and interval estimate	CO2 : Illustrate the use of statistical concepts to solve business problems	L3: Apply	<u>Internal-Test, Practical End Term-Sums</u>
<b>8</b>	<b>3.5</b>	<b>Hypothesis Testing</b>			
(i)	1	T test & F Test : Concepts	CO3 : Analyze the statistical information	L4 : Analyse	<u>Internal-Project</u>

			for business decision making		work <u>End term</u> _Practical
(ii)	2.5	T test & F test : Application	CO4 : Assess the tools & techniques used in decision making for its appropriateness	L5 : Evaluate	<u>Internal-Project work</u> <u>End term</u> _Practical
<b>9</b>	<b>1</b>	<b>Chi-Square test</b>			
(i)	1	Introduction to Chi-square	CO1 : Understand the various statistical concepts used in Decision Science	L2: Understand	<u>Internal-Viva Test,</u> <u>End Term-</u> <u>Theory</u>
<b>10</b>	<b>2</b>	<b>Analysis of Variance</b>			
(i)	1	Concept of ANOVA	CO2 : Illustrate the use of statistical concepts to solve business problems	L3: Apply	<u>Internal-Project work</u> <u>End term</u> _Practical
(ii)	1	Practical application using software	CO4 : Assess the tools & techniques used in decision making for its appropriateness	L5 : Evaluate	<u>Internal-Project work</u> <u>End term</u> _Practical
<b>11</b>	<b>4.0</b>	<b>Measures of Association</b>			
(i)	.5	Understand the various concepts related measures of association	CO1: Understand the various statistical concepts used in Decision Science	L2: Understand	<u>Internal</u> _Viva, Test
(ii)	2.5	Concept: Karl Pearson, Spearman coefficient of correlation	CO3 : Analyze the statistical information for business decision making	L3:Apply	<u>Internal-Project work</u> <u>End term</u> _Practical
(iii)	1	Practical application using software : Karl Pearson, Spearman coefficient of correlation	CO4 : Assess the tools & techniques used in decision making for its appropriateness	L4 : Analyze	<u>Internal-Project work</u> <u>End term</u> _Practical
<b>12</b>	<b>5</b>	<b>Regression Analysis</b>			
(i)	1	Understand the various concepts related with regression analysis	CO1: Understand the various statistical concepts used in Decision Science	L2: Understand	<u>Internal</u> _Viva  <u>End term</u> _Practical question

(ii)	1	Least Square Principle, Drawing the regression line	CO4: Assess the tools & techniques used in decision making for its appropriateness.	L5 : Evaluate	<u>Internal-Project work</u> <u>End term</u> <u>-Practical</u>
(iii)	2	Relationships among the correlation coefficient, Coefficient of Determination, Standard Error of Estimate.	CO5: Develop suitable statistical models for business decision making	L6: Create	<u>Internal-Project work</u> <u>End term</u> <u>-Practical</u>
(iv)	1	Multiple Regression Analysis	CO5: Develop suitable statistical models for business decision making	L6: Create	<u>Internal-Project work</u> <u>End term-</u> <u>Sums</u>
<b>13</b>	<b>1.5</b>	<b>Time Series and forecasting</b>			
(i)	.5	Introduction and components of time series	CO1: Understand the various statistical concepts used in Decision Science	L2: Understand	<u>Internal</u> <u>-Viva</u>  <u>End term</u> <u>-Theory question</u>
(ii)	1	Forecasting Techniques : Moving Average & Weighted Moving Average	CO3 : Analyze the statistical information for business decision making	L4: Analyse	<u>Internal-Project work</u> <u>End term</u> <u>-Practical</u>

### Pedagogy

1. Lecture
2. Case Studies
3. Presentation and assignments

### Evaluation

Internal	40%
External	60%
<b>Total</b>	<b>100%</b>

### Parameters of Internal Assessment:

1. Attendance
2. Class Participation
3. Class Test
4. Assignment
5. Project

### Assessment Mapping

Parameter	Marks	CO1	CO2	CO3	CO4	CO5
Internal	40	17.5%	25.0%	25.0%	15.0%	17.5%
Attendance	10	20.0%	20.0%	20.0%	20.0%	20.0%
Class Participation	10	20.0%	20.0%	20.0%	20.0%	20.0%
Class Test	10	30.0%	40.0%	30.0%	0.0%	0.0%
Assignments	5	0.0%	40.0%	60.0%	0.0%	0.0%
Projects	5	0.0%	0.0%	0.0%	40.0%	60.0%
<b>End Term</b>	<b>60</b>	<b>16.7%</b>	<b>16.7%</b>	<b>25.0%</b>	<b>25.0%</b>	<b>16.7%</b>
<b>Total</b>	<b>100</b>	<b>17.0%</b>	<b>20.0%</b>	<b>25.0%</b>	<b>21.0%</b>	<b>17.0%</b>

#### Text Book:

Statistical techniques in Business & Economics- Lind, Marchal & Wathen, Mc Graw Hill Education, 16<sup>th</sup> Edition, 2017.

#### Reference Books:

Book Title	Name of the Author	Publisher	Edition no.	Edition year
Business Statistics	Ken Black	Wiley India,	7th Edition	Reprint 2012
Fundamentals of Business Statistics.	J.K Sharma	Vikas Publishing house Pvt ltd, New Delhi	2 <sup>nd</sup> Edition	2014
Statistics for Management Prentice	Levin and Rubin	Pearson	7 <sup>th</sup> Edition	2011
Business Statistics in practice	Bruce L. Bowerman,	Tata Mc Graw Hill, Pearson.	7th Edition,	2014
Applied Statistical Methods	S. P. Gupta	S Chand	41 <sup>st</sup> Edition	2011
Business Statistics	S C Gupta	Himalaya Publishing	6 <sup>th</sup> Edition	2013

#### E-Books details:

Sr . No.	Name of the Book	Author's Name	Publication	link	Edition
1)	Introductory Statistics: Concepts , Models and Applications	David. W. Stockburger	Atomic dog publishing. com	<a href="http://www.pdftitles.com/book/13223/introductory-statistics-concepts-models-and-applications">http://www.pdftitles.com/book/13223/introductory-statistics-concepts-models-and-applications</a>	1996
2)	Business Statistics	Bajpai Naval	Pearson India	<a href="https://www.pinterest.com/pin/760404718307803413/">https://www.pinterest.com/pin/760404718307803413/</a>	2008
3)	Fundamentals of Business Statistics	Sharma J.K	Pearson India	<a href="https://docs.google.com/document/d/12xXI9UF2FEMuJ_uN6J6h7TJ1biiAp2kt1DKlh0y0yvA/edit">https://docs.google.com/document/d/12xXI9UF2FEMuJ_uN6J6h7TJ1biiAp2kt1DKlh0y0yvA/edit</a>	2008
4)	Problems & Solutions of Business Statistics	Sharma, J. K.	Pearson India	<a href="https://www.amazon.in/Business-Statistics-Problems-Solutions-Sharma-ebook/dp/B00CDIDNAG#reader_B00CDIDNAG">https://www.amazon.in/Business-Statistics-Problems-Solutions-Sharma-ebook/dp/B00CDIDNAG#reader_B00CDIDNAG</a>	2011
5)	Statistics for Economics, Accounting and business studies	Michael Barrow	Financial Times/ Prentice Hall	<a href="https://thenigerianprofessionalaccountant.files.wordpress.com/2013/04/statistics-for-economics-accounting-and-business-studies-4th-ed.pdf">https://thenigerianprofessionalaccountant.files.wordpress.com/2013/04/statistics-for-economics-accounting-and-business-studies-4th-ed.pdf</a>	2006
6	Business Statistics	Ken black	Wiley India	<a href="https://www.pdfdrive.net/business-statistics-e23260267.html">https://www.pdfdrive.net/business-statistics-e23260267.html</a>	2010