

**A.D.M. COLLEGE FOR WOMEN (AUTONOMOUS),  
NAGAPATTINAM-611001**  
( Nationally Re-accredited with “ A” grade by NAAC – 3<sup>rd</sup> Cycle)

**DEPARTMENT OF STATISTICS**

(For the candidates admitted from the academic year 2019-2020 onwards)



**STATISTICS**  
**SYLLABUS**

**A.D.M. COLLEGE FOR WOMEN (AUTONOMOUS), NAGAPATTINAM**  
**DEPARTMENT OF STATISTICS**

Course Structure under CBCS

(for the candidates admitted from the academic year 2019-2020 onwards)

SEM	PART	COURSE	TITLE	INST HOURS/ WEEK	CREDIT	EXAM HOURS	MARKS		TOTAL MARKS
							CIA	SE	
I	III	Allied Course I	Statistics for Economics-I	5	3	3	25	75	100
	III	Core Course	Statistical Methods for Business	6	5	3	25	75	100
II	III	Allied Course II	Statistics for Economics-II	5	3	3	25	75	100
		Core Course	Business Statistics	6	5	3	25	75	100
III	III	Allied Course III	Statistics for Economics-III	5	3	3	25	75	100
	III	Allied Course I	Mathematical Statistics-I	4	4	3	25	75	100
	III	Allied Course II	Statistics Practical	3	3	-	-	-	-
IV	III	Allied Course	Quantitative Methods	4	3	3	25	75	100
	III	Allied Course II	Statistics Practical	3	3	3	25	75	100
	III	Allied Course III	Mathematical Statistics-II	3	2	3	25	75	100

## **DEPARTMENT OF STATISTICS**

### Mark Allocation for Theory Papers

CIA	-	25 Marks
External	-	75 Marks
Total	-	100 Marks

### CIA Component

Test	-	10 Marks
Assignment	-	2 Marks
Seminar	-	3 Marks
Quiz/ Group Discussion	-	5 Marks
Attendance	-	5 Marks
Total		25 Marks

### Pattern of Question Papers (Theory)

Section A	-	10 x 2 = 20 Marks (No Choice)
Section B	-	5 x 5 = 25 Marks (Either or)
Section C	-	3 x 10 = 30 Marks (Any three out of 5)
Total		75 Marks

### Mark Allocation for Practical

CIA	-	40 Marks
Practical	-	60 Marks
Total		100 Marks

### Practical CIA Component

Mid Semester Practical	-	10 Marks
Model Practical	-	10 Marks
Practical Skill	-	10 Marks
Record Submission		5 Marks
Attendance		5 Marks
Total		40 Marks

### Pattern of Question Paper ( Practical)

Answer any Five out of Six (5 x 10)	-	50 Marks
Record	-	10 Marks
Total	-	60 Marks

**I B.A ECONOMICS  
ALLIED COURSE I  
STATISTICS FOR ECONOMICS -I**

**Internal : 25  
External : 75  
Exam hours: 3**

**Semester :I  
No. of Hours/Week: 5  
Credit: 3**

**Course Objectives :**

- To impart the knowledge about collection of data.
- To condense the mass of data.
- To present the data in diagrams and graphs.
- To enable the students to compute various measures of central tendency.
- To enable the students to compute various measures of dispersion.

**UNIT I : INTRODUCTION**

Statistics- Definition- Scope - Functions and Limitations of Statistics. Sources of data- Primary and Secondary – Methods of collecting Primary data. – Secondary data-Sources of collecting Secondary data.

( Content -12 Hrs, Assessment – 3 Hrs ) **15 hours**

**UNIT II : CLASSIFICATION AND TABULATION**

Classification of data- Objectives - Types of classification . Formation of frequency distribution (one way classification) – problems only. Tabulation– Definition – Parts of table – rules for tabulation –Kinds of tables. (no problems).

( Content -12 Hrs, Assessment – 3 Hrs ) **15 hours**

**UNIT III : DIAGRAMS AND GRAPHS**

Diagrams – advantages - general rules for constructing diagrams (one dimensional diagrams only ). Line diagram – Simple bar diagram – Subdivided bar – Multiple bar diagram– Pie diagram – Simple problems. Graphs – Histogram, Frequency Polygon, Frequency curve and Ogives. Difference between diagrams and graphs.

( Content -12 Hrs, Assessment – 3 Hrs ) **15 hours**

**UNIT IV : MEASURES OF CENTRAL TENDENCY**

Measures of central tendency- Arithmetic Mean, Median, Mode, Harmonic mean and Geometric mean– Simple problems only.

( Content -12 Hrs, Assessment – 3 Hrs ) **15 hours**

**UNIT V: MEASURES OF DISPERSION**

Measures of dispersion – Range, Quartile Deviation , Standard Deviation and their Coefficients – Simple problems only ( without Mean Deviation measure).

( Content -12 Hrs, Assessment – 3 Hrs ) **15 hours**

**Text Book:**

R.S.N.Pillai & V.Bagavathi, Statistics –S.Chand & company LTD, Reprint 2014.

**Reference Books:**

1.S.P.Gupta, Statistical methods- Sultan Chand and Sons , 45<sup>th</sup> Edition 2017

2.Pa.Navaneetham-Business tools for decision making – Jai publishers ,Trichy Reprint 2014

**Web - Resources :**

1. [www.analyticsvidhya.com](http://www.analyticsvidhya.com)
2. [www.makeuseof.com](http://www.makeuseof.com)

**Course Outcomes :**

On completion of the course, Students should be able to do

- data collection .
- classification and tabulation of data
- various diagrams and graphs.
- different measures of central tendency.
- various measures of dispersion.

**I B.A ECONOMICS  
ALLIED COURSE II  
STATISTICS FOR ECONOMICS -II**

**Internal : 25  
External : 75  
Exam hours: 3**

**Semester :II  
No. of Hours/Week: 5  
Credit: 3**

**Course Objectives :**

- To know the distribution of data.
- To know the types of relationship between the variables.
- To understand cause and effect relationship between the variable.
- To study the relation between qualitative data.
- To study the basic concept of probability.

**UNIT I: SKEWNESS AND KURTOSIS**

Skewness - Types and Methods - Karl Pearson's and Bowley's Coefficient of Skewness.  
Kurtosis - Definition - Types.

( Content -12 Hrs, Assessment – 3 Hrs ) **15 hours**

**UNIT II : CORRELATION ANALYSIS**

Simple Correlation – Definition – Types of Correlation – Scatter diagram – Measurement of Correlation – Karl Pearson's Coefficient of Correlation – Spearman's Rank Correlation Coefficient - Simple problems.

( Content -12 Hrs, Assessment – 3 Hrs ) **15 hours**

**UNIT III : REGRESSION ANALYSIS**

Linear Regression – Regression lines – X on Y and Y on X -Simple problems. Properties of Regression Coefficients (without proof) –Difference between Correlation and Regression.

( Content -12 Hrs, Assessment – 3 Hrs ) **15 hours**

**UNIT IV: ASSOCIATION OF ATTRIBUTES**

Association of attributes (two attributes only) – Positive and Negative classes- Ultimate class frequencies- Contingency table- Consistency of data-Types of Association – Methods of determining Association – Comparison of Observed and Expected frequency method –Yule's Coefficient of Association method –Simple problems.

( Content -12 Hrs, Assessment – 3 Hrs ) **15 hours**

## **UNIT V : THEORY OF PROBABILITY**

Probability- Random Experiments- Sample Space-Types of Events – Exhaustive Events- Equally likely events- Mutually Exclusive Events- Independent Events – Mathematical and Statistical Probability. Addition and Multiplication theorems (two events only ) – Simple problems.

( Content -12 Hrs, Assessment – 3 Hrs ) **15 hours**

[Question paper consists of 30% theory and 70% problems]

### **Text Book :**

R.S.N.Pillai & V.Bagavathi, Statistics –S.Chand & company LTD, Reprint 2014.

### **Reference Books:**

1. S.P.Gupta, Statistical methods- Sultan Chand and Sons , 45<sup>th</sup> Edition 2017
2. Pa.Navaneetham-Business tools for decision making – Jai publishers ,Trichy  
Reprint 2014
3. V.K.Kapoor, Modern Approach Fundamentals of Statistics for Business and Economics -  
Sultan Chand and Sons, New Delhi, Reprint 2014

### **Web - Resources :**

1. [www.analyticsvidhya.com](http://www.analyticsvidhya.com)
2. [www.makeuseof.com](http://www.makeuseof.com)

### **Course Outcomes:**

On completion of the course, Students should be able to do

- measures of skewness and kurtosis
- correlation analysis
- regression analysis.
- Association of attributes.
- problems related to probability.

**I.B.COM  
CORE COURSE  
STATISTICAL METHODS FOR BUSINESS**

**Internal : 25  
External : 75  
Exam hours: 3**

**Semester :I  
No. of Hours/Week: 6  
Credit: 5**

**Course Objectives :**

- To impart the knowledge about collection and condensation of data .
- To study various types of averages.
- To enable the students to compute various measures of dispersion.
- To impart the knowledge about the degree of relationship between variables and estimate unknown variable from known variable.
- To impart the knowledge about the basics of Index Numbers.

**UNIT I : INTRODUCTION**

Statistics- Definition- Scope - Functions and Limitations of Statistics . Primary and Secondary data – Definition. Methods of collecting Primary data — Sources of Secondary data. Classification of data- Objectives - Types of Classification and Formation of Frequency table (one variable only). Tabulation – Definition – Parts of table – Rules for tabulation –Kinds of tables. ( Content -15 Hrs, Assessment – 3 Hrs ) **18 hours**

**UNIT II : MEASURES OF CENTRAL TENDENCY**

Measures of central tendency- Arithmetic Mean, Median, Mode, Geometric Mean and Harmonic Mean– Simple problems. ( Content -15 Hrs, Assessment – 3 Hrs ) **18 hours**

**UNIT III : MEASURES OF DISPERSION, SKEWNESS AND KURTOSIS**

Measures of dispersion - Range, Quartile Deviation , Mean Deviation, Standard Deviation and their Coefficients - Simple problems only. Skewness - Types and Methods - Karl Pearson's and Bowley's Coefficient of Skewness. Kurtosis - definition - Types.

( Content -15 Hrs, Assessment – 3 Hrs ) **18 hours**

**UNIT IV : CORRELATION AND REGRESSION**

Simple Correlation- Definition – Types of Correlation – Methods of Correlation: Scatter diagram– Karl Pearson's Coefficient of Correlation – Spearman's Rank Correlation Coefficient (repeated and not repeated ranks) - Simple problems. Linear Regression – Regression lines – X on Y and Y on X – Simple problems.

( Content -15 Hrs, Assessment – 3 Hrs ) **18 hours**



## **UNIT V: INDEX NUMBERS**

Index Numbers – Definition – Uses – Construction. Unweighted Index Numbers – Simple Aggregative Method and Simple Average of Relatives Method. Weighted Method – Laspeyre's, Paasche's and Fisher's Index Numbers. Time Reversal and Factor Reversal tests – Simple problems .

( Content -15 Hrs, Assessment – 3 Hrs ) **18 hours**

[Question paper consists of 30% theory and 70% problems]

### **Text Book:**

S.P.Gupta, Statistical methods- Sultan Chand and Sons ,45<sup>th</sup> edition , 2017

### **Reference Books:**

- 1 R.S.N.Pillai & V.Bagavathi, Statistics –S.Chand & company LTD, Reprint 2014.
- 2 Pa.Navaneetham-Business tools for decision making – Jai publishers ,Trichy Reprint 2014.
- 3 V.K.Kapoor, Modern Approach to Fundamentals of Statistics for Business and Economics - Sultan Chand and Sons, New Delhi, Reprint 2014.

### **Web- Resources :**

1. [www.analyticsvidhya.com](http://www.analyticsvidhya.com)
2. [www.makeuseof.com](http://www.makeuseof.com)

### **Course Outcomes:**

On completion of the course, Students should be able to do

- data collection, classification and tabulation .
- different measures of central tendency.
- various measures of dispersion, skewness and kurtosis.
- correlation and regression analysis.
- index numbers.

**I M.COM  
CORE COURSE  
BUSINESS STATISTICS**

**Internal : 25  
External : 75  
Exam hours: 3**

**Semester :II  
No. of Hours/Week: 6  
Credit: 5**

**Course Objectives :**

- To create an overview about sampling and its various methods.
- To impart the knowledge about the degree of relationship between variables and estimate unknown variable from known variable.
- To study the various components of Time series.
- To impart the basic concept of probability and its probability distributions.
- To study the different types of test of hypotheses.

**UNIT I: STATISTICAL SURVEY AND SAMPLING METHODS**

Statistical Survey – Planning the Survey – Executing the Survey. Methods of Sampling – Probability Sampling – Simple Random Sampling- Stratified Sampling- Systematic Sampling- Cluster Sampling. Non- Probability Sampling – Judgement Sampling, Quota Sampling, Convenience Sampling. Sampling and Non Sampling Errors.

( Content -15 Hrs, Assessment – 3 Hrs ) **18 hours**

**UNIT II: CORRELATION AND REGRESSION ANALYSIS**

Simple Correlation: Definition – Types of Correlation – Methods of Correlation: Karl Pearson's Coefficient of Correlation – Properties of Correlation Coefficient (no proof) – Spearman's Rank Correlation Coefficient (repeated and not repeated ranks) - Simple problems. Linear Regression – Regression lines – X on Y and Y on X – Properties of Regression Coefficients (without proof) – Simple problems.

( Content -15 Hrs, Assessment – 3 Hrs ) **18 hours**

**UNIT III: TIME SERIES ANALYSIS**

Time Series – Definition – Uses – Components – Measurement of trend – Moving Average Method – Least Square Method (linear model only) – Measurement of Seasonal variation – Simple Average Method -Simple problems.

( Content -15 Hrs, Assessment – 3 Hrs ) **18 hours**

## **UNIT IV: PROBABILITY AND DISTRIBUTIONS**

Probability:– Mathematical and Statistical Probability –Types of Events - Addition And Multiplication Theorems – Simple Problems. Random Variable – Definition of Discrete And Continuous Random Variable. Binomial, Poisson and Normal Distributions – Definition – Properties (Without Proof) - Simple Problems. (No Derivations and Fitting of Distributions)

( Content -15 Hrs, Assessment – 3 Hrs ) **18 hours**

## **UNIT V: TESTING OF HYPOTHESIS**

Concept of Sampling Distribution and Standard Error- Uses of Standard Error .Test of Hypothesis – Null And Alternative Hypothesis – Type I And Type II Errors – One Tailed And Two Tailed Tests – Level of Significance – Procedure of Testing Hypothesis -- Tests of Significance – Large Sample Test: Test For Single Proportion, Difference of Proportions, Single Mean, Difference of Means – Simple problems.

Small Sample Tests -- Student's t – Applications of t – t-test for Single Mean, Difference of Means –Paired t- test. F-Test For Equality of Variances – Chi Square Test of Goodness of Fit and Chi Square Test for Independence of Attributes – Simple problems.

( Content -15 Hrs, Assessment – 3 Hrs ) **18 hours**

### **Text Book :**

S.P.Gupta, Statistical methods- Sultan Chand and Sons ,45<sup>th</sup> edition,2017

### **Reference Books:**

- 1 S.C.Gupta., Fundamentals of Statistics – Himalaya Publishing House, 7<sup>th</sup> Revised Edition & Enlarged,2018
- 2 R.S.N.Pillai & V.Bagavathi, Statistics -S.Chand & company LTD, Reprint 2014.
- 3 P.R. Vittal, Mathematical Statistics, Margham Publications, Chennai, Reprint 2013.
- 4 V.K.Kapoor,Modern approach to Fundamentals of Statistics for Business and Economics - Sultan Chand and Sons, New Delhi, Reprint 2014.

### **Web - Resources :**

1. [www.scimagojr.com](http://www.scimagojr.com)
2. <http://pdfs.semanticscholar.org>.

### **Course Outcomes:**

On completion of the course, Students should be able to do

- statistical survey .
- correlation and regression analysis
- analysis of Time series .
- the problems related to probability.
- testing hypothesis on research.