

RAJAH SERFOJI GOVT. COLLEGE
(AUTONOMOUS B++)
THANJAVUR-613005

DEPARTMENT OF STATISTICS
(2015-2016 onwards)

RAJAH SERFOJI GOVT COLLEGE (AUTONOMOUS), THANJAVUR-5**DEPARTMENT OF STATISTICS****BOARD OF STUDIES MEETING****Venue: Statistics Department****Date: 26.09.14****Time: 10.30 A.M****MEMBERS IN BOARD OF STUDIES**

S.No	Members	Address of the Members
1	CHAIRMAN Prof. P.Veeramani	Head & Associate Professor, Department of Statistics, Rajah Serfoji Govt College, Thanjavur – 05.
2	UNIVERSITY NOMINEE Dr. G. Venkatesan	Head & Assistant Professor , Department of Statistics, Govt. Arts College (Autonomous), Salem - 7.
3	SUBJECT EXPERT 1 Dr. R.Ravichandran	Head & Associate Professor , Department of Statistics, Govt. Arts College (Autonomous), Karur – 05.
4	SUBJECT EXPERT 2 Dr. S. Devaraj Arumainayakam	Head and Associate Professor , Department of Statistics, Govt. Arts College (Autonomous), Coimbatore – 18.
5	ALUMNI Thiru. M. Murugesan.	Asst. Director, NSSO (E.O.D) 5 th Street, Sundram Nagar, Medical College Road, Thanjavur – 04.
6	MEMBER Prof. V. Murugesan	Assistant Professor , Department of Statistics, Rajah Serfoji Govt College, Thanjavur – 05.
7	MEMBER Prof. M. Rajan	Assistant Professor , Department of Statistics, Rajah Serfoji Govt College, Thanjavur – 05.
8	MEMBER Dr. A. Joshua Joseph	Guest Lecturer in Statistics, Department of Statistics, Rajah Serfoji Govt College, Thanjavur – 05.
9	MEMBER Dr. G.Arivazhagan	Guest Lecturer in Statistics, Department of Statistics, Rajah Serfoji Govt College, Thanjavur – 05.

10	MEMBER Prof. M. Rabert	Guest Lecturer in Statistics, Department of Statistics, Rajah Serfoji Govt College, Thanjavur – 05.
11	MEMBER Prof. R. Vetriselvi	Guest Lecturer in Statistics, Department of Statistics, Rajah Serfoji Govt College, Thanjavur – 05.
12	MEMBER Prof. S. Malathi	Guest Lecturer in Statistics, Department of Statistics, Rajah Serfoji Govt College, Thanjavur – 05.

RAJAH SERFOJI GOVT. COLLEGE (AUTONOMOUS B++) THANJAVUR-5

COURSE STRUCTURE FOR **B.Sc., STATISTICS UNDER CBCS**

(Applicable to the Candidates admitted from the academic year 2011-2012 onwards)

PART	CODE	COURSE	TITLE	HRS	MARKS		TOTAL	CREDIT
					IE	WE		
I SEMESTER								
I	RR1T1	LT	PART - I Tamil - I	6	25	75	100	3
II	RR1E1	LE	PART – II English - I	6	25	75	100	3
III	RR1S1	CC1	Descriptive Statistics	6	25	75	100	5
III	-	CC3	Major Practical – I	3	-	-	-	-
III	RR1ASM1	Allied 1	Allied Mathematics for Statistics - I	4	25	75	100	4
III	-	Allied 3	Allied Mathematics for Statistics - III	3	-	-	-	-
IV	RR1VE	VE	Value Education	2	25	75	100	2
TOTAL				30	125	375	500	17
II SEMESTER								
I	RR2T2	LT	PART – I Tamil – II	6	25	75	100	3
II	RR2E2	LE	PART – II English – II	6	25	75	100	3
III	RR2S2	CC2	Probability and Discrete Distributions	6	25	75	100	5
III	RR2SP1	CC3	Major Practical – I (Based on CC1 &CC2)	3	40	60	100	5
III	RR2ASM2	Allied 2	Allied Mathematics for Statistics - II	4	25	75	100	4
III	RR2ASM3	Allied 3	Allied Mathematics for Statistics - III	3	25	75	100	4
IV	RR2ES	ES	Environmental Studies	2	25	75	100	2
TOTAL				30	190	510	700	26
III SEMESTER								
I	RR3T3	LT	PART – I Tamil – III	6	25	75	100	3
II	RR3E3	LE	PART – II English – III	6	25	75	100	3
III	RR3S3	CC4	Continuous Probability Distributions	6	25	75	100	5
III	-	CC6	Major Practical - II	3	-	-	-	-
III	RR3AA1	Allied 4	Financial Accounting	4	25	75	100	4
III	-	Allied 6	Management Accounting	3	-	-	-	-
IV	RR3SB1	SB1	Skill Based - 1	2	25	75	100	2
TOTAL				30	125	375	500	17

Signature of the HOD

PART	CODE	COURSE	TITLE	HRS	MARKS		TOTAL	CREDIT
					IE	WE		
			IV SEMESTER					
I	RR4T4	LT	PART - I Tamil - IV	6	25	75	100	3
II	RR4E4	LE	PART – II English - IV	6	25	75	100	3
III	RR4S4	CC5	Statistical Inference	6	25	75	100	5
III	RR4SP2	CC6	Major Practical – II (Based on CC4 & CC5)	3	40	60	100	5
III	RR4AA2	Allied 5	Cost Accounting	4	25	75	100	4
III	RR4AA3	Allied 6	Management Accounting	3	25	75	100	4
IV	RR4SB2	SB2	Skill Based - 2	2	25	75	100	2
			TOTAL	30	190	510	700	26
			V SEMESTER					
III	RR5S5	CC7	Sampling Techniques	6	25	75	100	5
III	RR5S6	CC8	Design of Experiments	6	25	75	100	4
III	RR5SP3	CC9	Major Practical – III (Based on CC7, CC8 and MEC2)	4	40	60	100	4
III	RR5SEL1	MEC1	Programming in Fortran 77	4	25	75	100	4
III	RR5SEL2	MEC2	Numerical Methods	4	25	75	100	4
III	RR5BTELO1	NMEC1	Health Education	4	25	75	100	4
IV	RR5SB3	SB3	Skill Based - 3	2	25	75	100	2
			TOTAL	30	190	510	700	27
			VI SEMESTER					
III	RR6S7	CC10	Elements of Operations Research	6	25	75	100	5
III	RR6S8	CC11	Statistical Quality Control	6	25	75	100	4
III	RR6S9	CC12	Time Series, Index Numbers and Vital Statistics	5	25	75	100	4
III	RR6SP4	CC13	Major Practical – IV (Based on CC10, CC11 and CC12)	3	40	60	100	4
III	RR6SEL3	MEC3	Computer Programming in - ‘C’	4	25	75	100	4
III	RR6CSELO2	NMEC2	Fundamental of Information Technology	4	25	75	100	4
	RR6GS	GS	GENDER STUDIES	2	25	75	100	1
		Extra Activities	NSS/NCC/SPORTS/RED CROSS	-	-	-	-	1
			TOTAL	30	190	510	700	27
			GRAND TOTAL				3800	140

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		Papers	Total Credit
PART - I	TAMIL	4 × 3	12
PART - II	ENGLISH	4 × 3	12
PART - III	CORE	8 × 5 = 40 5 × 4 = 20	60
	ELECTIVES	3 × 4	12
	ALLIED	6 × 4	24
	NON-MAJOR	2 × 4	8
PART - IV	ES,VE	2 × 2	4
	SKILL BASED	3 × 2	6
PART - V	GS	1 × 1	1
	EXTRA ACTIVITIES	1 × 1	1
TOTAL PAPERS		38	TOTAL CREDIT
			140

Signature of the HOD

DEPARTMENT OF STATISTICS – SYLLABUS CONTAINS

- 1. B.Sc., Statistics – Major and Major Elective Course Papers**
- 2. Other Department (B.Sc., Bio-Technology & B.Sc., Computer Science) Non Major Elective Course Papers**
- 3. B.Sc., Mathematics – 3 Allied Papers**
- 4. B.A., Economics – 3 Allied Papers**
- 5. B.Com., - 1 Allied Paper**
- 6. B.B A., - 1 Allied Paper**

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List of Major (Core Course) Papers

- CC1 – DESCRIPTIVE STATISTICS**
- CC2 – PROBABILITY AND DISCRETE DISTRIBUTIONS**
- CC3 – MAJOR PRACTICAL – I**
- CC4 – CONTINUOUS PROBABILITY DISTRIBUTIONS**
- CC5 – STATISTICAL INFERENCE**
- CC6 – MAJOR PRACTICAL – II**
- CC7 – SAMPLING TECHNIQUES**
- CC8 – DESIGN OF EXPERIMENTS**
- CC9 – MAJOR PRACTICAL – III**
- CC10 – ELEMENTS OF OPERATIONS RESEARCH**
- CC11 – STATISTICAL QUALITY CONTROL**
- CC12 – TIME SERIES, INDEX NUMBERS AND VITAL STATISTICS**
- CC13 – MAJOR PRACTICAL - IV**

Signature of the HOD

Credits : 5
 Hours / Week : 6
 Medium of Instruction : **English**

Code : **RR1S1****Semester: I****(For students admitted from 2015 onwards)****CC1 – DESCRIPTIVE STATISTICS****(Major for B.Sc., Degree Course)****Unit 1:**

Statistics - Definition – functions and scope of statistics – Primary and Secondary data – methods of collection and sources – merits and demerits. Classification – definition and types. Tabulation – steps in tabulation, types of tables

Unit 2:

Diagrammatic Representation – Bar diagram – Types of bar diagrams, Pie diagram. Graphical Representation – Histogram, Frequency curve, Frequency polygon, Ogives and Lorenz curve (construction and uses). Measures of Central Tendency – Arithmetic Mean, Median, Mode, Geometric mean and Harmonic mean

Unit 3:

Measures of Dispersion – Range, Quartile deviation, Mean deviation, Standard Deviation and Coefficient of Variation (Concept, problems and uses). Measures of moments, skewness and kurtosis (Concept & Problems).

Unit 4:

Correlation Analysis – Definition and types of Correlation properties (Statement and proof), Methods – Scatter diagram, Karl Pearson's Coefficient of Correlation and Spearman's Rank Correlation Coefficient. Regression lines and Regression coefficient – Properties and problems.

Unit 5:

Association of Attributes – Class frequencies – Order of frequencies - 2×2 contingency table – finding missing frequencies – Yule's coefficient of association and Yule's coefficient of colligation.

List of books for study / Reference**S.C.Gupta and V.K.Kapoor** – Fundamentals of Mathematical Statistics**S.P.Gupta** – Statistical Methods.**Question Paper Pattern:**

Maximum Marks:75

Exam duration: Three Hours

Part A $10 \times 2 = 20$ Answer **ALL** Questions (Two questions from each unit)Part B $5 \times 5 = 25$ Answer **ALL** Questions (Either or type-Two questions from each unit)Part C $3 \times 10 = 30$ Answer Any **THREE** Questions (One question from each unit)**Signature of the HOD**

Credits : 5
 Hours / Week : 6
 Medium of Instruction : **English**

Code : **RR2S2**

Semester: II
(For students admitted from 2015 onwards)
CC2 – PROBABILITY AND DISCRETE DISTRIBUTIONS
(Major for B.Sc., Degree Course)

Unit 1:

Events – Types of events – Sample Space – definition and Axioms of Probability. Addition theorem on Probability. Conditional Probability – Multiplication theorem on Probability – Independent events – Mutual and pairwise events– Baye’s theorem and its applications.

Unit 2:

Random variables – Definition - Univariate Discrete random Variable –Definition. Probability mass functions – Distribution function, properties. Bivariate random variables – Definition - Joint Probability mass function – marginal and Conditional distribution functions and their Properties.

Unit 3:

Mathematical expectations – Definition - Properties - Measures of A.M, S.D, Moments, and Correlation Coefficient for discrete random Variables. Moment generating functions, Characteristics function, Cumulant generating function - Definition and their Properties (Univariate and bivariate discrete distributions).

Unit 4:

Discrete distributions: Binomial, Poisson and Geometric distributions- Constants and Properties. (Simple problem in Binomial distribution only)

Unit 5:

Hyper Geometric, Negative Binomial, and discrete Uniform distributions Constants and Properties.

List of books for study / References

S.C. Gupta and V.K. Kapoor - Fundamentals of Mathematical Statistics

Johnson and Kotz - Discrete distribution. John Wiley Publications, New York.

Question Paper Pattern:

Maximum Marks:75

Exam duration: Three Hours

Part A $10 \times 2 = 20$ Answer **ALL** Questions (Two questions from each unit)

Part B $5 \times 5 = 25$ Answer **ALL** Questions (Either or type-Two questions from each unit)

Part C $3 \times 10 = 30$ Answer Any **THREE** Questions (One question from each unit)

Signature of the HOD

Credits : 5
 Hours / Week : 6
 Medium of Instruction : English

Code : **RR2SP1**

Semester: II
(For students admitted from 2015 onwards)
CC3 – MAJOR PRACTICAL - I
(Based on CC1 & CC2)
(Major for B.Sc., Degree Course)

Unit 1:

Construction of Univariate and Bivariate Frequency Distributions. Diagrammatic representations – Bar and Pie diagrams. Graphical representations – Histograms, Frequency curve, Frequency Polygon, Ogive curves

Unit 2:

Measures of Central Tendency – Arithmetic Mean, Median, Mode, Geometric mean and Harmonic mean. Measures of Dispersion – Mean Deviation, Quartile Deviation, Standard deviation and Co-efficient of variation. Moments, Measures of Skewness – Bowley's & Karl Pearson method.

Unit 3:

Computation of Karl Pearson's Co-efficient of Correlation and Spearman's Rank Correlation, Regression equations (two variables only).

Unit 4:

Marginal and Conditional distribution - Expectation – Mean, Variance, and Correlation Co-efficient for Bivariate Distribution only,

Unit 5:

Fitting of Binomial and Poisson distribution, Calculation of Yule's Co-efficient of association and Yule's Co-efficient of Colligation.

NOTE:

3 Units to be Covered in Semester I and the Remaining 2 Units in the Semester II.

Question Paper Pattern:

Maximum Marks: 60

Practical Exam duration: Three Hours

Pattern of Practical Question: $4 \times 15 = 60$ Marks

Internal: (Model Practical – 25 Marks + Observation note – 10 Marks + Record Note – 5 Marks = 40 Marks)

Signature of the HOD

Credits : 5
 Hours / Week : 6
 Medium of Instruction : English

Code : **RR3S3**

Semester: III

(For students admitted from 2015 onwards)

CC4 – CONTINUOUS PROBABILITY DISTRIBUTIONS

(Major for B.Sc., Degree Course)

Unit 1:

Univariate and Bivariate continuous Random variables – Definitions - Distributions Function, Joint marginal and conditional density functions – expectations - Covariance and Correlation.

Unit 2:

Continuous Distributions- Uniform, Normal, Exponential, Gamma and Beta - definition, M.G.F, C.G.F, Mode, Moments, characteristics functions, Additive property (on using M.G.F).

Unit 3:

Sampling Distributions - chi square Distribution - definition, M.G.F, Mode, Additive Property - Student's 't' and 'F' distributions - definition and derivation of density Functions.

Unit 4:

Convergence in probability-definition. Chebychev inequality and weak law of large numbers (with proof) and Statement of strong law of large numbers – Central limit theorems – De Moivre's Laplace theorem.

Unit 5:

Concept and derivation of partial and Multiple Correlation Coefficients, Multiple Regression (Three variables only) – Simple problems.

List of books for study / Reference**S.C Gupta and V.K. Kapoor** – Fundamentals of Mathematical Statistics**Johnson and Kotz** – Continuous Distributions - IQuestion Paper Pattern:

Maximum Marks:75

Exam duration: Three Hours

Part A $10 \times 2 = 20$ Answer **ALL** Questions (Two questions from each unit)Part B $5 \times 5 = 25$ Answer **ALL** Questions (Either or type-Two questions from each unit)Part C $3 \times 10 = 30$ Answer Any **THREE** Questions (One question from each unit)**Signature of the HOD**

Credits : 5
 Hours / Week : 6
 Medium of Instruction : English

Code : **RR4S4****Semester: IV****(For students admitted from 2015 onwards)****CC5 – STATISTICAL INFERENCE****(Major for B.Sc., Degree Course)****Unit 1:**

Point estimation: Definition, sample, statistic, parameter Estimators – Properties - Definition of Unbiasedness, Consistency, Sufficiency and Efficiency. Maximum Likelihood Estimators and Method of moments (Simple Problems) – Cramer – Rao Inequality.

Unit 2:

Interval Estimation – Confidence Intervals for Proportions, Mean, Variance and Variance ratio based on Chi-Square, Students t, F and Normal distributions.

Unit 3:

Testing of hypothesis – Definition – Null and Alternative Hypothesis, Level of significance, critical Region, Type I and Type II errors. Sampling distribution, Standard error, Power of the test and most powerful tests based on 't', Chi-square, 'F' and Normal distributions. Neyman-Pearson lemma. (Without proof). Definition of Likelihood ratio test

Unit 4:

Test of significance. Large sample test - test for single proportions and difference between two proportions, test for single mean and difference between two means. (Known and unknown variance). Small sample test – 't' test for single mean and difference between two means. Chi- square test of independence of attributes and Goodness of fit, 'F'- test for ratio of variances.

Unit 5:

Non-parametric tests –Definition, advantages and disadvantages- Run, Median, Sign and Mann-Whitney tests (one sample and two sample problems)

List of books for study / Reference

Gupta S.C and Kapoor V.K - Fundamentals of Mathematical Statistics.

Goon A.M. Gupta M.A and Das Gupta B (1980) – An Outline of Statistical Theory, Volume 2

Question Paper Pattern:

Maximum Marks:75

Exam duration: Three Hours

Part A $10 \times 2 = 20$ Answer **ALL** Questions (Two questions from each unit)

Part B $5 \times 5 = 25$ Answer **ALL** Questions (Either or type-Two questions from each unit)

Part C $3 \times 10 = 30$ Answer Any **THREE** Questions (One question from each unit)

Signature of the HOD

Credits : 5
Hours / Week : 6
Medium of Instruction : English

Code : **RR4SP2**

Semester: IV
(For students admitted from 2015 onwards)
CC6 – MAJOR PRACTICAL - II
(Based on CC4 & CC5)
(Major for B.Sc., Degree Course)

Unit 1:

1. Drawing samples (of size not exceeding 25) from
 - (i) Uniform distribution and
 - (ii) Normal distribution with known mean and variance, using random number tables
2. Obtain Marginal and conditional density function – Expectations and correlations.

Unit 2:

1. Computation of partial and multiple correlation coefficients
2. Construction of multiple linear regression equation (3 variables)

Unit 3:

Large sample tests and confidence intervals - proportions, means, variance and ratio of variance.

Unit 4:

Small sample tests and confidence intervals - proportions, single mean and difference between two means. Independence tests for contingency tables of order 2×2 .

Unit 5:

Non-parametric tests – Sign test, Median test, Run test, Mann-Whitney test (one sample and two sample problems).

Question Paper Pattern:

Maximum Marks: 60

Practical Exam duration: Three Hours

Pattern of Practical Question: $4 \times 15 = 60$ Marks

Internal: (Model Practical – 25 Marks + Observation note – 10 Marks + Record Note – 5 Marks = 40 Marks)

Signature of the HOD

Credits : 5
 Hours / Week : 6
 Medium of Instruction : English

Code : **RR5S5****Semester: V****(For students admitted from 2015 onwards)****CC7 – SAMPLING TECHNIQUES****(Major for B.Sc., Degree Course)****Unit 1:**

Design, Organization, and execution of the sample surveys – principal steps in sample survey – pilot survey – sampling and non – sampling errors – Advantages of sampling over Complete enumeration – Limitations of sampling.

Unit 2:

Sampling from finite population – simple random sampling – unbiased estimate of the mean and variance – Estimation of standard error from a sample – Determination of sample size.

Unit 3:

Stratified random sampling – properties of the unbiased estimate of the mean and Variances – optimum and proportional allocation –Relative precision of a stratified sampling and simple random sampling – Estimation of gain due to stratification

Unit 4:

Systematic sampling – Estimation of mean and variance – comparison of simple random sampling and stratified random sampling with systematic sampling

Unit 5:

Ratio – estimators – Variance of the ratio estimate – comparison of the ratio estimate with the mean per unit – Bias of the ratio estimate – Regression estimators – linear regression estimate – Regression estimators with pre-assigned ratio estimator. Large sample comparison with the ratio estimate and the mean per unit

List of books for study / Reference

William G.Cohran (1984) – sampling Techniques.

Kapoor V.K. and Gupta S.C. - Fundamentals of Applied statistics.

Question Paper Pattern:

Maximum Marks:75

Exam duration: Three Hours

Part A $10 \times 2 = 20$ Answer **ALL** Questions (Two questions from each unit)

Part B $5 \times 5 = 25$ Answer **ALL** Questions (Either or type-Two questions from each unit)

Part C $3 \times 10 = 30$ Answer Any **THREE** Questions (One question from each unit)

Signature of the HOD

Credits : 4
 Hours / Week : 6
 Medium of Instruction : English

Code : **RR5S6**

Semester: V

(For students admitted from 2015 onwards)

CC8 – DESIGN OF EXPERIMENTS

(Major for B.Sc., Degree Course)

Unit 1:

Analysis of variance – Definition and assumptions Cochran's theorem (statement only)
 ANOVA – One way and Two way classification

Unit 2:

Design of Experiments – Terminology and principles of experiments Completely Randomized Design (CRD), Randomized Block Design (RBD) and Latin Square Design (LSD) Estimation of one and two missing values in RBD and LSD.

Unit 3:

Factorial Experiments – main effects and interactions, Definition of contrast and orthogonal contrast, Analysis of 2^2 , 2^3 and 3^2 factorial Experiments.

Unit 4:

Confounding in Factorial design – Confounding in 2^2 and 2^3 Experiment, merits and demerits of confounding.

Unit 5:

Split – plot design – Analysis, advantages and disadvantages, Analysis of Covariance for a one – way layout with one concomitant variable and an RBD with one concomitant variable

List of books for study / Reference

S.C. Gupta and V.K.Kapoor - Fundamentals of Applied Statistics.

Goon A.M. Gupta M.A and Das Gupta, B - Fundamentals of Statistics.

Question Paper Pattern:

Maximum Marks:75

Exam duration: Three Hours

Part A $10 \times 2 = 20$ Answer **ALL** Questions (Two questions from each unit)

Part B $5 \times 5 = 25$ Answer **ALL** Questions (Either or type-Two questions from each unit)

Part C $3 \times 10 = 30$ Answer Any **THREE** Questions (One question from each unit)

Signature of the HOD

Credits : 4
 Hours / Week : 4
 Medium of Instruction : English

Code : **RR5SP3****Semester: V****(For students admitted from 2015 onwards)****CC9 – MAJOR PRACTICAL - III****(Based on CC7 , CC8 and MEC2)****(Major for B.Sc., Degree Course)****Unit 1:**

Estimation of mean and variance of the population and variance of the estimator of the mean using simple random sampling and stratified random sampling with optimum and proportional allocations, Estimation of sample size.

Unit 2:

Ratio and linear regression methods of estimation of population mean and total estimation of mean and variance of the population and variance of the estimator of mean using systematic random sampling.

Unit 3:

Analysis of CRD, RBD, LSD layouts. Missing plot techniques in RBD and LSD (one or two missing observations), Graeco – Latin Square Design.

Unit 4:

Analysis of 2^2 and 2^3 factorial design with and without confounding – Analysis of 3^2 factorial experiments – Analysis of covariance for an RBD with one concomitant variable.

Unit 5:

Numerical analysis: Interpolation for equal and unequal intervals. Use of Newton's forward, Newton's backward, Newton's divided difference and Lagrange formulae. Numerical integration: Trapezoidal rule, Simpson's $1/3^{\text{rd}}$, Simpson's $3/8^{\text{th}}$ rule, Weddle's rule.

Question Paper Pattern:

Maximum Marks: 60

Practical Exam duration: Three Hours

Pattern of Practical Question: $4 \times 15 = 60$ Marks

Internal: (Model Practical – 25 Marks + Observation note – 10 Marks + Record Note – 5 Marks = 40 Marks)

Signature of the HOD

Credits : 5
 Hours / Week : 6
 Medium of Instruction : English

Code : **RR6S7**

Semester: VI

(For students admitted from 2015 onwards)

CC10 – ELEMENTS OF OPERATIONS RESEARCH

(Major for B.Sc., Degree Course)

Unit 1:

Definition of OR – Scope of OR - Different types of models. Definition of Linear Programming problem, Formulation of LPP - Graphical method of solving LPP (2 variables only) Solving LPP by simplex method and Big M method (No degeneracy and cycling) – simple problems

Unit 2:

Definition of Transportation problem – Unbalanced TP – Initial solution to a TP by North West corner rule, Cost minimum method and Vogel’s approximation method. Algorithm to find optimal solution to a TP – simple problems - Definition of Assignment problem – Unbalanced AP, Solving an assignment problem

Unit 3:

Theory of games – Two person zero sum game, pay off matrix – saddle point and value of the Game – minimax and maximin principle – pure and mixed strategies. Reduction of a pay-off matrix using dominance property – solution of a game without saddle point

Unit 4:

Introduction to Queueing theory – Characteristics of a queueing system Customers behavior in a queue. Steady – state solution for Pn in the models (M/M/1) : (∞ /FIFO) and (M/M/1) : (N /FIFO) calculation of E(n), E(m), average length of non-empty queue length – simple problems.

Unit 5:

Introduction to network – concepts of activity, node, network, critical path, different floats, Critical path method – calculation of earliest time and latest time PERT calculations – critical path.

List of books for study / Reference

Kanti Swarup, P.K. Gupta & Man Mohan : Operations research – Sultan Chand & Sons

Question Paper Pattern:

Maximum Marks:75

Exam duration: Three Hours

Part A $10 \times 2 = 20$ Answer **ALL** Questions (Two questions from each unit)Part B $5 \times 5 = 25$ Answer **ALL** Questions (Either or type-Two questions from each unit)Part C $3 \times 10 = 30$ Answer Any **THREE** Questions (One question from each unit)**Signature of the HOD**

Credits : 4
 Hours / Week : 6
 Medium of Instruction : English

Code : **RR6S8**

Semester: VI

(For students admitted from 2015 onwards)

CC11 – STATISTICAL QUALITY CONTROL

(Major for B.Sc., Degree Course)

Unit 1:

Concept of SQC - Chance and Assignable causes of variation, Uses of SQC, Process and product control - – natural tolerance limits and Specification limits – control chart for variables – \bar{X} and R- charts, Revised control charts.

Unit 2:

Control charts for attributes, definition OC, ASN function – Control chart for fraction defectives (p-chart), control chart for number of defectives (d-chart) (for fixed and variable sample sizes), control chart for number of defects per unit (c - chart).

Unit 3:

Acceptance sampling by attributes: definition OC, ASN functions – Acceptance Quality level (A.Q.L), - Lot tolerance percent defectives (L.T.P.D), process average fraction defectives (P), producer's and consumer's risks. Rectifying inspection plans. Average outgoing quality limit (A.O.Q.L).

Unit 4:

Operating Characteristic (O.C) curve - Average sample number (A.S.N) single sample plans: Determination of n and c A.O.Q.L – O.C and A.O.Q curves – Double sampling plans: O.C. curve, A.S.N and A.T.I curves – comparison with single sampling plan.

Unit 5:

Sequential sampling – Sequential Probability Ratio Test (S.P.R.T) O.C. of sequential sampling plans, A.S.N function of sequential sampling plans.

List of books for study / Reference

Gupta. S.C. & Kapoor, V.K; Fundamentals Applied statistics Sultan Chand & co.

Duncan A.J. : Statistical Quality control, Mc Graw Hill, New York.

Question Paper Pattern:

Maximum Marks:75

Exam duration: Three Hours

Part A $10 \times 2 = 20$ Answer **ALL** Questions (Two questions from each unit)

Part B $5 \times 5 = 25$ Answer **ALL** Questions (Either or type-Two questions from each unit)

Part C $3 \times 10 = 30$ Answer Any **THREE** Questions (One question from each unit)

Signature of the HOD

Credits : 4
 Hours / Week : 5
 Medium of Instruction : English

Code : **RR6S9**

Semester: VI

(For students admitted from 2015 onwards)

CC12 – TIME SERIES, INDEX NUMBERS AND VITAL STATISTICS

(Major for B.Sc., Degree Course)

Unit 1:

Concept of Time series – Additive and Multiplicative models, Uses of Time series, Measurement of Trend – Graphic method, Method of Semi-Averages – Method of moving Averages, Method of least squares (Linear Quadratic and exponential) – Simple problems.

Unit 2:

Measurement of seasonal fluctuations – Method of simple averages – Ratio to trend method – Ratio to moving average and Link relative method – concept of Cyclic variations and Irregular movements.

Unit 3:

Definition and types of Index numbers – Construction and uses of Index numbers – Calculations of Index numbers – Fixed base and chain base Index numbers, simple aggregate method and Weighted Aggregate method – Laspeyre's, Paasche's, Bowley's, Marshall-Edgeworth and Fisher's index numbers – Simple problems.

Unit 4:

Weighted Average of price relative method (By using A.M. and G.M) – Construction of Chain indices. The criteria of a good index number – Time Reversal and Factor Reversal tests and Family Budget method – Simple problems.

Unit 5:

Vital Statistics: Definition, Uses, Methods of obtaining vital statistics - Registration method, Census enumeration and Analytical method. Measurement of Fertility – CBR – SFR – GFR – TFR. Reproduction rates: Gross reproduction rate – Net reproduction rate. Measurement of Mortality – Specific death rate – Standardized death rate. Life tables – Uses of life table – Construction of a life table. (Concept, definition and simple problems).

List of books for study / Reference

S.C.Gupta & V.K.Kapoor – Fundamentals of Applied Statistics, Sultan Chand and Sons New Delhi.

Goon. A.M.M. A Gupta and Das Gupta B - Fundamentals of Statistics Vol II, World Press, Calcutta.

Question Paper Pattern:

Maximum Marks:75

Exam duration: Three Hours

Part A $10 \times 2 = 20$ Answer **ALL** Questions (Two questions from each unit)Part B $5 \times 5 = 25$ Answer **ALL** Questions (Either or type-Two questions from each unit)Part C $3 \times 10 = 30$ Answer Any **THREE** Questions (One question from each unit)

Signature of the HOD

Credits : 4
Hours / Week : 3
Medium of Instruction : English

Code : **RR6SP4**

Semester: VI
(For students admitted from 2015 onwards)
CC13 – MAJOR PRACTICAL - IV
(Based on CC10, CC11 and CC12)
(Major for B.Sc., Degree Course)

Unit 1:

Solving LPP by Graphical method and simplex method. Solving transportation problems and Assignment problems.

Unit 2:

Construction of \bar{X} , R, p, c and np charts, OC curves for single sampling plan.

Unit 3:

Time series: Fitting of linear, Quadratic and Exponential trend by the least square method, Finding trend values by method of moving averages. Determination of seasonal variation by simple average method, moving average method (Additive and Multiplicative model) and Link relative method.

Unit 4:

Index Numbers: Construction of fixed and chain base numbers, Laspeyre's, Paasche's, Bowley's, Fisher's and Marshall-Edgeworth index numbers. Construction of Cost of living index numbers.

Unit 5:

Vital Statistics: Measurement of Fertility-CBR, SFR, GFR and TFR - Measurement of Mortality – CDR, Standardized death rate - Life table.

Question Paper Pattern:

Maximum Marks: 60

Practical Exam duration: Three Hours

Pattern of Practical Question: $4 \times 15 = 60$ Marks

Internal: (Model Practical – 25 Marks + Observation note – 10 Marks + Record Note – 5 Marks = 40 Marks)

Signature of the HOD

List of Major Elective Courses:

1. Programming in FORTRAN 77
2. Computer programming in – ‘C’
3. Numerical Methods

List of Non Major Elective Courses:

1. Bio-Statistics
2. Statistical Data Analysis

Signature of the HOD

Credits : 4
 Hours / Week : 4
 Medium of Instruction : English

Code : **RR5SEL1****Semester: V**

(For students admitted from 2015 onwards)

MEC1 – PROGRAMMING IN FORTRAN -77

(MEC for B.Sc., Degree Course)

Unit 1:

Organization of a computer – Flowcharts and decision tables – High level Languages – Character used in FORTRAN constants and variables – Type declaration for real and integers – Arithmetic operations and Expression – Arithmetic assignment statements.

Unit 2:

Relational Expressions – Logical constants and expressions – Built – in Functions – INPUT – OUTPUT format statements – Filed Specifications – Integer field, Real field, E field, X field and Hierarchy functions – Control statements – GOTO statement.

Unit 3:

Logical IF and arithmetic IF statements Do and Nested Do loop subscribed variables – Uses of multiple subscripts – DIMENSION statement – Implied DO loops – PAUSE, STOP and END statements.

Unit 4:

Functions and SUBROUTINES: Statement functions – Function subscribed Subroutine subprogram – COMMON and EQUIVALENCE statements – The DATA statement COMPLEX numbers.

Unit 5:

Writing Programmes in FORTRAN 77 programs for the formation of frequency distribution – calculation of Mean, Standard Deviation, Skewness, Kurtosis, Correlation and Regression coefficients – Matrix addition, Subtraction and Multiplication.

List of books for study / Reference

Rajaraman V. (1981): Programming with FORTRAN 77. Prentice Hall of India.

Question Paper Pattern:

Maximum Marks:75

Exam duration: Three Hours

Part A $10 \times 2 = 20$ Answer **ALL** Questions (Two questions from each unit)

Part B $5 \times 5 = 25$ Answer **ALL** Questions (Either or type-Two questions from each unit)

Part C $3 \times 10 = 30$ Answer Any **THREE** Questions (One question from each unit)

Signature of the HOD

Credits : 4
 Hours / Week : 4
 Medium of Instruction : **English**

Code : **RR5SEL2**

Semester: V
(For students admitted from 2015 onwards)
MEC2 – NUMERICAL METHODS
(MEC for B.Sc., Degree Course)

Unit 1:

Finite differences – Forward and Backward difference operators ‘E’ and ‘And’ their basic properties – Interpolation with equal intervals – Newton’s forward and backward difference formulae. (simple problems).

Unit 2:

Interpolation with unequal intervals – Divided differences and their properties – Newton’s divided difference formula – Lagrange’s formula. (simple problems)

Unit 3:

Central difference interpolation formula – Gauss forward and backward differences formulae – Stirling’s, Bessel’s and Everett’s central difference formulae. (simple problems)

Unit 4:

Inverse intropolation – Lagrange’s method – Interaction of successive approximation – method – simple problems. Numerical differentiation - Numerical differentiation up to second order only – Newton forward and Newton backward.

Unit 5:

Numerical integration – Trepezoidal rule – Simpson’s $1/3^{\text{rd}}$ and $3/8^{\text{th}}$ rules – Weddle’s rule – Numerical method of solution of ordinary differential equations – Taylor’s series method – Euler method and Runge Kutta second order.

List of books for study / Reference

Gupta P.P. & Malik G.S. Calculus of finite differences and Numerical analysis.

Question Paper Pattern:

Maximum Marks:75

Exam duration: Three Hours

Part A $10 \times 2 = 20$ Answer **ALL** Questions (Two questions from each unit)

Part B $5 \times 5 = 25$ Answer **ALL** Questions (Either or type-Two questions from each unit)

Part C $3 \times 10 = 30$ Answer Any **THREE** Questions (One question from each unit)

Signature of the HOD

Credits : 4
 Hours / Week : 4
 Medium of Instruction : English

Code : **RR6SEL3**

Semester: VI
(For students admitted from 2015 onwards)
MEC3 – COMPUTER PROGRAMMING IN – ‘C’
(MEC for B.Sc., Degree Course)

Unit 1:

Introduction to C, Characters set, Variables, Data types – Declaration, Type conversions, Increment And Decrement operators, Bitwise, logical and Assignment operators.

Unit 2:

Expression and conditional expressions, Control structures If – Else, Switch, While, For, Do-While loop structures. Break, Continue, Go and label statement Functions, Function Returning, Non-integers, function argument State and register variables.

Unit 3:

Arrays and strings – Array Declaration – Multi Dimensional arrays, Strings / Character Arrays, Array initialization – Pointers and addresses. Pointers and Arrays – Pointer to Functions

Unit 4:

Structures and Functions, Arrays of Structures, Fields Unions – type definition – standard input and output – formatted output – Output – Access to the standard library.

Unit 5:

File access, File handling in C – File descriptions – Error handling – “Low level I / O – Read and Write”. Open, Create, Close, Unlink – Random Access – seek and I seek.

List of books for study / Reference

Balagursamy – Programming in C.

Question Paper Pattern:

Maximum Marks:75

Exam duration: Three Hours

Part A $10 \times 2 = 20$ Answer **ALL** Questions (Two questions from each unit)

Part B $5 \times 5 = 25$ Answer **ALL** Questions (Either or type-Two questions from each unit)

Part C $3 \times 10 = 30$ Answer Any **THREE** Questions (One question from each unit)

Signature of the HOD

Credits : 4
 Hours / Week : 4
 Medium of Instruction : **English**

Code : **RR5SELO1**

Semester: V
(For students admitted from 2015 onwards)
NMEC1– BIO STAISTICS
(Non Major Elective Course for B.Sc., Bio-Technology)

Unit 1:

Bio statistics: definition – scale- function of statistics – characteristics of statistics - collection of data- primary and secondary data – sources - merits, demerits-uses and limitations of statistics.

Unit 2:

Classification: definition- types of classification-uses- tabulation - definition- types of tabulation rules of construction of tabulation- Diagrammatic representation- bar diagram – Pie diagram. Advantages and Disadvantages

Unit 3:

Frequency distribution: formation – discrete and continuous data – Graphical representation – Histogram- Frequency polygon – Frequency curve- Ogive curves - Merits and Demerits– Comparison of Diagrammatic and Graphical Representations.

Unit 4:

Measures of central tendency: Arithmetic mean – median – mode - Merits and Demerits. Measures of Dispersion: range, coefficient of range – standard deviation – coefficient of variation- Merits and Demerits (Simple Problems).

Unit 5:

Correlation – definition and types of correlation, properties (Statement Only)- Methods – Scatter diagram- Karl Pearson’s coefficient of correlation and Spearman’s Rank Correlation coefficient - Merits and Demerits (Simple Problems).

List of books for study / Reference

W.W. Daniel – Bio statistics Basic concepts and Methodology for health sciences 9th edition, Wiley India Pvt. Ltd.

S.P.Gupta: Statistical Methods, Sultan chand and Sons, New Delhi.

Question Paper Pattern:

Maximum Marks:75

Exam duration: Three Hours

Part A $10 \times 2 = 20$ Answer **ALL** Questions (Two questions from each unit)

Part B $5 \times 5 = 25$ Answer **ALL** Questions (Either or type-Two questions from each unit)

Part C $3 \times 10 = 30$ Answer Any **THREE** Questions (One question from each unit)

Signature of the HOD

Credits : 4
 Hours / Week : 4
 Medium of Instruction : **English**

Code : **RR6SELO2**

Semester: VI
(For students admitted from 2015 onwards)
NMEC2 – STATISTICAL DATA ANALYSIS
(Non Major Elective Course for B.Sc., Computer Science)

Unit 1:

Collection of Statistical data - Primary and Secondary – Methods -Preparation of Questionnaire and Schedules.

Unit 2:

Classification and tabulation - Bar diagrams - Pie diagram – Histogram - Frequency polygon - Frequency Curve - Merits and Demerits.

Unit 3:

Measures of central tendency-mean, median, mode-measures of dispersion-range, mean deviation, standard deviation and coefficient of variation.

Unit 4:

Measures of Skewness – Definition – types – methods – Karl Pearson’s Skewness – Bowley’s Skewness - Merits and Demerits. (Simple problems only)

Unit 5:

Correlation analysis – Karl Pearson’s Coefficient of Correlation – Spearman’s Rank Correlation Coefficient. (Simple problems only)

List of books for study / Reference

S.P.Gupta: Statistical Methods

Question Paper Pattern:

Maximum Marks:75

Exam duration: Three Hours

Part A $10 \times 2 = 20$ Answer **ALL** Questions (Two questions from each unit)

Part B $5 \times 5 = 25$ Answer **ALL** Questions (Either or type-Two questions from each unit)

Part C $3 \times 10 = 30$ Answer Any **THREE** Questions (One question from each unit)

Signature of the HOD

Credits : 4

Code : **RR1AS1**

Hours / Week : 4

Medium of Instruction : **Tamil / English****Semester: I****(For students admitted from 2015 onwards)****ALLIED – I - PAPER - I****MATHEMATICAL STATISTICS - I****(For B.Sc., Mathematics Students – Statistics Allied)****Unit 1:**

Measures of central tendency – Mean, Median, Mode, Geometric Mean, Harmonic Mean and Quartiles. Measures of Dispersion – Quartile deviations and Standard deviation. Measures of Skewness and Kurtosis.

Unit 2:

Probability - Axiomatic and classical probability – Simple Problems. Addition multiplication theorem of Probability– Simple Problems.

Unit 3:

Concept of random variable – discrete and continuous, distribution functions, probability mass function, probability density function, mathematical expectation and Moment generating functions.

Unit 4:

Bivariate Probability distribution – discrete and continuous, marginal and conditional distributions,

Unit 5:

Correlation – Definition, Types of Correlation, Karl Pearson's Co-efficient of correlation, Rank Correlation Co-efficient – Linear Regression equations.

List of books for study / Reference

Gupta S.C. and V.K. Kapoor – Fundamentals of Mathematical Statistics, Sultan & Sons, New Delhi.

Question Paper Pattern:

Maximum Marks:75

Exam duration: Three Hours

Part A $10 \times 2 = 20$ Answer **ALL** Questions (Two questions from each unit)Part B $5 \times 5 = 25$ Answer **ALL** Questions (Either or type-Two questions from each unit)Part C $3 \times 10 = 30$ Answer Any **THREE** Questions (One question from each unit)**Signature of the HOD**

Credits : 4
 Hours / Week : 4
 Medium of Instruction : English

Code : **RR2AS2****Semester: II**

(For students admitted from 2015 onwards)

ALLIED – I - PAPER - II**MATHEMATICAL STATISTICS - II**

(For B.Sc., Mathematics Students – Statistics Allied)

Unit 1:

Discrete Distributions – Binomial and Poisson Distributions – Constants and M.G.F. (Simple Problems).

Unit 2:

Continuous Distributions – Normal, Exponential and Uniform Distributions – Constants and M.G.F.

Unit 3:

Beta, Gamma – Definition, Mean and Variances. ‘t’, F and Chi-square distribution – (Definitions and Derivation of the distribution)

Unit 4:

Test of Significance for large Samples – Single mean, difference between mean, Single proportion and difference between proportion.

Unit 5:

Test of Significance for Small Samples – ‘t’ test for Single mean, Difference between means, Paired ‘t’ test and Simple Correlation, Chi-square test for goodness of fit and independence of attributes.

List of books for study / Reference

Gupta S.C. and V.K. Kapoor – Fundamentals of Mathematical Statistics, Sultan & Sons, New Delhi.

Kapoor and Saxena – Mathematical Statistics, Chand & Co, New Delhi.

Question Paper Pattern:

Maximum Marks:75

Exam duration: Three Hours

Part A $10 \times 2 = 20$ Answer **ALL** Questions (Two questions from each unit)

Part B $5 \times 5 = 25$ Answer **ALL** Questions (Either or type-Two questions from each unit)

Part C $3 \times 10 = 30$ Answer Any **THREE** Questions (One question from each unit)

Signature of the HOD

Credits : 4
 Hours / Week : 6
 Medium of Instruction : English

Code : **RR2ASP****Semester: II**

(For students admitted from 2015 onwards)

ALLIED PRACTICAL - I**MATHEMATICAL STATISTICS – III - PRACTICAL**

(For B.Sc., Mathematics Students – Statistics Allied)

Unit 1:

Calculations of Arithmetic Mean, Median, Mode, Geometric Mean, Harmonic Mean and Quartiles.

Unit 2:

Computation of M.D, S.D and Co-efficient of variation. Karl Pearson's and Bowley's Co-efficient of Skewness.

Unit 3:

Computation of Karl Pearson's co-efficient of correlation, Spearman's rank correlation and Regression lines.

Unit 4:

Fitting of Binomial and Poisson distributions. Fitting of Normal distribution

Unit 5:

Test of significance based on Normal Distribution and Student's t – distribution for mean, proportions, and simple correlation. Chi-square test. Test of goodness of fit and test for independence of attributes.

NOTE:

3 Units to be covered in Semester - I and remaining 2 Units in Semester - II

Question Paper Pattern:

Maximum Marks: 60

Practical Exam duration: Three Hours

Pattern of Practical Question: $4 \times 15 = 60$ Marks

Internal: (Model Practical – 25 Marks + Observation note – 10 Marks + Record Note – 5 Marks = 40 Marks)

Signature of the HOD

Credits : 4
 Hours / Week : 4
 Medium of Instruction : English

Code : **RR3ASE1**

Semester: III
(For students admitted from 2015 onwards)
PAPER - I
STATISTICS FOR ECONOMICS – I
B.A., ECONOMICS ALLIED STATISTICS
(Allied for B.A., Degree Course)

Unit 1:

Statistics – Definition, Scope, functions and characteristics – Collection of statistical Data – Primary and Secondary sources. Preparation of questionnaire and schedules, Classification and Tabulation.

Unit 2:

Diagrammatic representation of statistical data – Simple, component bar diagrams, compound bar diagrams and Pie diagrams – Graphical representation – Histogram, Line graph, Frequency polygon, Frequency curve and Ogives.

Unit 3:

Measures of central tendency – Characteristics of a good measure of central tendency Mean, Median, Mode, Geometric mean, Harmonic Mean, Quartiles, Deciles and Percentiles – Definition, Merits and Demerits (Simple Problems).

Unit 4:

Measures of Dispersion – Absolute and Relative measures based on Range, Quartile Deviation, Mean Deviation, Standard Deviation and Coefficient of variation – Definition, Merits and Demerits (Simple Problems).

Unit 5:

Measures of Skewness – Karl Pearson’s coefficient of skewness, Bowley’s coefficient of skewness. First four moments - Kurtosis – Measures of Kurtosis (Simple Problems)

List of books for study / Reference

S.P.Gupta – Statistical Methods

Question Paper Pattern:

Maximum Marks:75

Exam duration: Three Hours

Part A $10 \times 2 = 20$ Answer **ALL** Questions (Two questions from each unit)

Part B $5 \times 5 = 25$ Answer **ALL** Questions (Either or type-Two questions from each unit)

Part C $3 \times 10 = 30$ Answer Any **THREE** Questions (One question from each unit)

Signature of the HOD

Credits : 4
 Hours / Week : 4
 Medium of Instruction : English

Code : **RR4ASE2**

Semester: IV
(For students admitted from 2015 onwards)
PAPER - II
STATISTICS FOR ECONOMICS – II
B.A., ECONOMICS ALLIED STATISTICS
(Allied for B.A., Degree Course)

Unit 1:

Association of attributes- contingency tables – Consistency, Methods of studying association – Yule’s coefficient of association – coefficient of colligation (Simple problems)

Unit 2:

Correlation – definition, Uses. Methods of studying correlation – Scatter diagram – Karl Pearson’s coefficient of correlation – spearman’s rank correlation coefficient – Linear regression (Two variables) - Simple problems

Unit 3:

Basic sampling methods – Simple random sampling, Stratified random sampling, Systematic, Cluster and Quota sampling, Definition of sampling distribution and Standard error.

Unit 4:

Index numbers – Definition, Problems in construction of Index numbers and Uses – Laspeyre’s, Pasche’s, Fisher’s, Marshall Edgeworth’s & Bowley’s index numbers, Factor reversal test and Time reversal test (Simple problems)

Unit 5:

Elements of vital statistics – methods of obtaining vital statistics (Registration Method, Census enumeration and analytical method) Construction of life table and its Uses. (Simple problems)

List of books for study / Reference

S.P.Gupta – Statistical Methods

Question Paper Pattern:

Maximum Marks:75

Exam duration: Three Hours

Part A $10 \times 2 = 20$ Answer **ALL** Questions (Two questions from each unit)

Part B $5 \times 5 = 25$ Answer **ALL** Questions (Either or type-Two questions from each unit)

Part C $3 \times 10 = 30$ Answer Any **THREE** Questions (One question from each unit)

Signature of the HOD

Credits : 4
 Hours / Week : 6
 Medium of Instruction : English

Code : **RR4ASE3**

Semester: IV
(For students admitted from 2015 onwards)
PAPER - III
STATISTICS FOR ECONOMICS – III
B.A., ECONOMICS ALLIED STATISTICS
(Allied for B.A., Degree Course)

Unit 1:

Elements of set theory, sample space, Events – Definition of probability, additive and multiplicative laws of probability without proof-(Simple problems)

Unit 2:

Binomial distribution, Poisson distribution, Normal distribution (concept and definition only) their properties (without proof) and Uses, (Simple problems)

Unit 3:

Large sample tests, Test for single mean with known variance and unknown variance – Test for difference between two means with known and unknown variance.

Unit 4:

Small sample test based on Chi-square, 't'. Test for difference between single and two sample means Chi-square test for independence of attributes. (Simple problems)

Unit 5:

Concept of Time series – Components of time series – Measurement of trend – Graphical method – Method of moving averages, Least square method for Linear trend (Simple problems)

List of books for study / Reference

Sivathanupillai – Economics and business statistics.

S.P.Gupta – Statistical Methods.

Question Paper Pattern:

Maximum Marks:75

Exam duration: Three Hours

Part A $10 \times 2 = 20$ Answer **ALL** Questions (Two questions from each unit)

Part B $5 \times 5 = 25$ Answer **ALL** Questions (Either or type-Two questions from each unit)

Part C $3 \times 10 = 30$ Answer Any **THREE** Questions (One question from each unit)

Signature of the HOD

Credits : 4
 Hours / Week : 6
 Medium of Instruction : English

Code : **RR1ABA1**

Semester: II
(For students admitted from 2015 onwards)
I - PAPER
STATISTICS FOR MANAGEMENT
B.B.A., ALLIED STATISTICS
(Allied for B.B.A., Degree Course)

Unit 1:

Nature and scope of statistics: Uses of statistics in business; Statistical data – Primary and Secondary- Classification of data – frequency distribution – Histogram, frequency polygon and curve; Graphs and Diagrams, Pie diagram and Lorenz curve.

Unit 2:

Measures of central tendencies – Arithmetic Mean, Median, Mode, Geometric Mean and Harmonic Mean –Uses of averages in Business; Measures of Dispersion – Range, Quartiles Deviation, Mean Deviation and Standard Deviation. Co-efficient of variation.

Unit 3:

Simple Correlation – Karl Pearson’s and Spearman’s Rank Correlation; Regression lines. Index numbers - Cost of living index numbers.

Unit 4:

Elements of differential calculus: concept of Maxima and Minima, with simple applications. Matrices and its operations addition and subtraction

Unit 5:

Multiplication of matrices, Transpose of Matrix; Elementary Operations, Inverse of matrix (simple problems).

List of books for study / Reference

J.D.Gupta P.K.Gupta, Man Mohan (TMH) – Mathematics for business and Economics

Question Paper Pattern:

Maximum Marks:75

Exam duration: Three Hours

Part A $10 \times 2 = 20$ Answer **ALL** Questions (Two questions from each unit)

Part B $5 \times 5 = 25$ Answer **ALL** Questions (Either or type-Two questions from each unit)

Part C $3 \times 10 = 30$ Answer Any **THREE** Questions (One question from each unit)

Signature of the HOD

Credits : 4
 Hours / Week : 5
 Medium of Instruction : English

Code : **RR2ACO3**

Semester: II
(For students admitted from 2015 onwards)

III - PAPER
STATISTICAL METHODS
B.Com., ALLIED STATISTICS
(Allied for B.Com., Degree Course)

Unit 1:

Nature and scope of statistical methods in commerce. Collection, Classification and tabulation. Diagrams and Graphs. Measures of central tendencies – Arithmetic Mean, Median, Mode, Geometric Mean and Harmonic Mean.

Unit 2:

Measures of Dispersion – Range, Quartiles, Deciles, Percentiles, Quartiles Deviation, Mean Deviation and Standard Deviation. Co-efficient of variation. Measurement of Skewness – Karl Pearson's & Bowley's methods.

Unit 3:

Correlation- Simple Rank – Coefficient of concurrent deviation. Regression analysis – simple regression equations – X on Y and Y on X.

Unit 4:

Time series analysis-components- Fitting a straight line by the method of least square- Moving averages.

Unit 5:

Index numbers - weighted and unweighted - Price index numbers - Laspeyre's, Paasche's and Fisher index numbers - Time and Factor Reversal test - Cost of living index numbers.

List of books for study / Reference

Business statistics by **Prof. Navaneethan** – Anand publishers.
 Statistics – Theory and practice by **RSN. Pillai and Bhagavathi**- S.Chand & co.
 Statistical Methods BY **S.P.Gupta** - S.Chand & co.

Question Paper Pattern:

Maximum Marks:75

Exam duration: Three Hours

Part A $10 \times 2 = 20$ Answer **ALL** Questions (Two questions from each unit)Part B $5 \times 5 = 25$ Answer **ALL** Questions (Either or type-Two questions from each unit)Part C $3 \times 10 = 30$ Answer Any **THREE** Questions (One question from each unit)**Signature of the HOD**