FATIMA COLLEGE (AUTONOMOUS)

Re-Accredited with "A++" Grade by NAAC (Cycle - IV)

Maryland, Madurai- 625 018, Tamil Nadu, India

NAME OF THE DEPARTMENT : STATISTICS

NAME OF THE PROGRAMME :B.Sc. STATISTICS

PROGRAMME CODE   : USST

ACADEMIC YEAR   : 2023 - 2024

Minutes of the Annual upgradation of Syllabus meeting in Statistics held on 03-04-2023 at 10.00 am.

Members:
1. Dr. E. Helena, Head, Department of Statistics, Fatima College, Madurai.
2. Dr. B. Sivakumar, Associate Professor, School of Mathematics, Madurai Kamaraj University, Madurai.
3. Dr. A. Kachi Mohideen, Assistant Professor, PG and Research Department of Statistics, Thanthai Periyar Govt. Arts and Science College, Trichy.
4. Dr. V. Sangeetha, Assistant Professor, Department of Statistics, PSG Arts and Science College, Coimbatore.
5. Mr. S. Sindhuja, Senior Statistical officer, NSSO (FOD) TN (N), Chennai R.O. Ministry of Statistics & P.I. Government of India, Chennai.
6. Mr. R. Haarini, System Associate, Infosys Limited Konapanna Agrahara, Electronic City Phase I, Bangalore.
7. Dr. K. Sangeetha, Dean of Academic Affairs, Fatima College, Madurai.
8. Dr. K. Mano, Assistant Professor, Department of Statistics, Fatima College, Madurai
9. Mrs. P. Dhanapriya, Assistant Professor, Department of Statistics, Fatima College, Madurai
10. Ms. T. Shobana, Assistant Professor, Department of Statistics, Fatima College, Madurai.

Action taken report 2022-2023.

Common Suggestions offered in the Previous board	Action taken for the academic Year
1. New Skill based Course to be introduced	Sampling distributions is introduced.
2. More number of Problems to be introduced in Practical Statistics.	Revision is done on the Practical Statistics. Course.

Revision of Courses

Course Code	Course Title	% of revision	Relevance to L R N G				Scope for EM EN SD		
1. 23STS SB3	Practical Statistics II	25%			✓	✓			✓
2. 23STS SBS	Practical Statistics III	25%			✓	✓			✓

Core Courses introduced (PART-III)

Course Code	Course Title	Relevance to L R N G	Scope for EM EN SD	Need for Introduction
1	Descriptive Statistics	✓	✓	
2	Probability Theory	✓	✓	
3	Discrete Probability Distribution	✓	✓	
4.	Matrix and Linear Algebra	✓	✓	

Elective Courses introduced (PART - III)

	Course Code	Course Title	Relevance to Scope for							Need for Introduction
			L	R	N	G	EM	EN	SD	
1.		Business Mathematics and Statistics (offered to B.com cA)			✓					✓
2.		Mathematics for Statistics			✓					✓

Skill Enhancement / Foundation Courses introduced (PART - IV).

SEC/ FC	Course Code	Course Title	Relevance to Scope for							Need for Introduction
			L	R	N	G	EM	EN	SD	
SEC 1		Basics of Statistics			✓					✓
FC		Bridge Course in Statistics			✓					✓
SEC 2		Basics of Statistics			✓					✓
SEC 3		Statistics Practicals I				✓	✓			✓

The board reviewed the syllabi for II UG (III & IV Semester) and III UG (V and VI Semester)

As per TANSCHE guidelines the board Passed the syllabi for I UG (I & II Semester)

The following revisions were
carried out:
　　23ST5SB3 — Practical Statistics - II.
Problems on Sampling Theory, Estimation
Theory and Applied Statistics are
included.

　　23ST6SB5 — Practical Statistics - iii.
Problems on Testing of hypotheses, Design
of Experiments, Demography and
Actuarial Statistics are included.

　　New Self Learning Course :
Introduction to Phython is introduced.

The following are the Courses for II UG
(iii & iv Semester) and iii UG (v and vi
Semester)
　　iii Semester
　　22ST3CC5 — Continuous Probability Distributions
　　19ST3CC6 — Sampling Theory
　　19G3ACST3 — Linear Programming
　　19ST3SB1 — Practical Statistics — I

　　iv Semester
　　19ST4CC7 — Estimation Theory
　　22ST4CC8 — Applied Statistics
　　19G4ACST4 — Linear Algebra
　　22ST4SB2 — Sampling Distributions

V̄ Semester

19ST5CC9 - Testing of Hypotheses
19ST5CC10 - Design of Experiment
19ST5CC11 - Demography.
19ST5CC12 - Real Analysis
19ST5ME1B - Computer Programming in C

19ST5ME2 - C - Practicals
22ST5ME3B - Object Oriented Programming with C++
22ST5ME4 - C++ Practicals
.23ST5SB3 - Practical Statistics - II
19ST5SB4 - Statistical Software: SPSS.

V̄I Semester

19ST6CC13 - Statistical Quality Control.
19ST6CC14 - Stochastic Processes
19ST6CC15 - Actuarial Statistics
19ST6ME5/ - Numerical Methods/
19ST6ME6/- Multivariate Analysis /
19ST6ME7 - Regression Analysis
19ST6ME8 - Operations Research /
19ST6ME9 - Industrial Statistics /
22ST6ME10 - Econometrics.
23ST6SB5 - Practical Statistics - ĩĩĩ
19ST6SB6 - Statistical Software : R.

The board also reviewed the Syllabi for the Self Learning Courses.
1. Quantitative Aptitude and data Interpretation.
2. Statistics using Excel.
3. Biostatistics.

1.	Dr. F. HELENA	P. Rpoh
2.	Dr. B. SIVAKUMAR	B. Sive
3.	Dr. A. KACHI MOHIDEEN	
4.	Dr. V. SANGEETHA	V. 03/04/23
5.	Ms. S. Sindhuja	ABSENT
6.	Ms. R. HAARINI	ABSENT
7.	Dr. K. SANGEETHA	
8.	Dr. K. MANO	K. Ma...0.
9.	Mrs. P. DHANAPRIYA	
10	Ms. T. SHOBANA	

VISION OF THE DEPARTMENT

To empower women by developing human capabilities through quality education in the field of Statistics

MISSION OF THE DEPARTMENT

To develop statistical and probabilistic theories and techniques and to propagate statistical knowledge through teaching and outreach programs, in order to serve the needs of the society.

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

A graduate of B.Sc. <u>STATISTICS</u> programme after five years will be

PEO 1	Our graduates will be academic, digital and information literates, creative, inquisitive, innovative and desirous for the "more" in all aspects
PEO 2	They will be efficient individual and team performers, exhibiting progress, flexibility, transparency and accountability in their professional work
PEO 3	The graduates will be effective managers of all sorts of real – life and professional circumstances, making ethical decisions, pursuing excellence within the time framework and demonstrating apt leadership skills
PEO 4	They will engage locally and globally evincing social and environmental stewardship demonstrating civic responsibilities and employing right skills at the right moment.

GRADUATE ATTRIBUTES (GA)

Fatima College empowers her women graduates holistically. A Fatimite achieves all-round empowerment by acquiring Social, Professional and Ethical competencies. A graduate would sustain and nurture the following attributes:

I. SOCIAL COMPETENCE	
GA 1	Deep disciplinary expertise with a wide range of academic and digital literacy

GA 2	Hone creativity, passion for innovation and aspire excellence
GA 3	Enthusiasm towards emancipation and empowerment of humanity
GA 4	Potentials of being independent
GA 5	Intellectual competence and inquisitiveness with problem solving abilities befitting the field of research
GA 6	Effectiveness in different forms of communications to be employed in personal and professional environments through varied platforms
GA 7	Communicative competence with civic, professional and cyber dignity and decorum
GA 8	Integrity respecting the diversity and pluralism in societies, cultures and religions
GA 9	All – inclusive skill sets to interpret, analyse and solve social and environmental issues in diverse environments
GA 10	Self awareness that would enable them to recognise their uniqueness through continuous self-assessment in order to face and make changes building on their strengths and improving their weaknesses
GA 11	Finesse to co-operate exhibiting team-spirit while working in groups to achieve goals
GA 12	Dexterity in self-management to control their selves in attaining the kind of life that they dream for
GA 13	Resilience to rise up instantly from their intimidating setbacks
GA 14	Virtuosity to use their personal and intellectual autonomy in being life-long learners
GA 15	Digital learning and research attributes
GA 16	Cyber security competence reflecting compassion, care and concern towards the marginalised
GA 17	Rectitude to use digital technology reflecting civic and social responsibilities in local, national and global scenario

	II. PROFESSIONAL COMPETENCE	
GA 18	Optimism, flexibility and diligence that would make them professionally competent
GA 19	Prowess to be successful entrepreuners and become employees of trans-national societies
GA 20	Excellence in Local and Global Job Markets
GA 21	Effectiveness in Time Management
GA 22	Efficiency in taking up Initiatives
GA 23	Eagerness to deliver excellent service
GA 24	Managerial Skills to Identify, Commend and tap Potentials
	III. ETHICAL COMPETENCE	
GA 25	Integrity and be disciplined in bringing stability leading a systematic life promoting good human behaviour to build better society
GA 26	Honesty in words and deeds
GA 27	Transparency revealing one's own character as well as self-esteem to lead a genuine and authentic life
GA 28	Social and Environmental Stewardship
GA 29	Readiness to make ethical decisions consistently from the galore of conflicting choices paying heed to their conscience
GA 30	Right life skills at the right moment

PROGRAMME OUTCOMES (PO)

On completion of B.Sc. Statistics programme, the graduates would be able to

PO 1	Evolve as globally competent professionals, researches and entrepreneurs possessing collaborative and leadership skills, for developing innovative solutions in multidisciplinary environment

PO 2	Create, select and apply appropriate techniques, resources and modelling to statistical activities with an understanding of the limitations
PO 3	Involve in lifelong learning to foster the sustainable development in the emerging areas of technology and in the broadest context of statistical change
PO 4	Communicate effectively through soft skills, report writing, documentation and effective presentations
PO 5	Implement ethical principles and responsibilities of a statistician to serve the society

PROGRAMME SPECIFIC OUTCOMES (PSO)

On completion (after three years) of B.Sc. Statistics programme, the graduates would be able to

PSO 1	Apply the knowledge of Statistics, Mathematics and Computer science to become competent professionals at global level
PSO 2	Apply statistical knowledge to analyze and solve complex problems using appropriate statistical methodology and interpret results in a variety of settings
PSO 3	Demonstrate the ability of critical observation, logical, analytical and problem-solving skills
PSO 4	Write code to extract and reformat real data and to utilize statistical programming environments
PSO 5	Effectively present statistical findings to an audience lacking statistical expertise and work collaboratively
PSO 6	Excel as socially committed statistics students having mutual respect, effective communication skills, high ethical values and empathy for the needs of society

PROGRAMME CODE: USST

PART – I – TAMIL / FRENCH / HINDI– 12 CREDITS

PART – I – TAMIL

Offered by the Research Centre of Tamil

S. NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CRS	CIA Mks	ESE Mks	TOT. Mks
1.								
2.								
3.	III	19TL3C3	Language- Epic Literature nghJj;jkpo; - fhg;gpa ,yf;fpak;	5	3	40	60	100
4.	IV	19TL4C4	Language-Sangam Literature nghJj;jkpo; - rq;f ,yf;fpak;	5	3	40	60	100
			Total	20	12			

PART – I –FRENCH

Offered by The Department of French

S. NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CRE DITS	CIA Mks	ESE Mks	TOT. MKs
1.								
2.								
3.	III	19RL3C3	PART 1 LANGUAGE FRENCH - LE NIVEAU INTERMEDIAIRE – LA CIVILISATION, LA LITTERATURE ET LA GRAMMAIRE	5	3	40	60	100

S. NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CRE DITS	CIA Mks	ESE Mks	TOT. MKs
4.	IV	19RL4C4	PART 1 LANGUAGE FRENCH - LE NIVEAU DE SUIVRE – LA CIVILISATION, LA LITTERATURE ET LA GRAMMAIRE	5	3	40	60	100
			TOTAL	**20**	**12**			

Offered by The Department of Hindi

S. NO	SE M.	COURSEC ODE	COURSE TITLE	HRS	CRE DITS	CIA Mks	ESE Mks	TOT. MKs
1.	III	19DL3C3	PART 1 LANGUAGE HINDI - हिंदी साहित्य का आदिकाल और भक्तिकाल	5	3	40	60	100
2.	IV	19DL4C4	PART 1 LANGUAGE HINDI - हिंदी साहित्य का आधुनिक काल	5	3	40	60	100
			TOTAL	**20**	**12**			

PART – II -ENGLISH – 12 CREDITS

Offered by The Research Centre of English

S. NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CREDITS	CIA Mks	ESE Mks	TOT. MKs
1.	III	19EL3WN	ENGLISH FOR DIGITAL ERA	5	3	40	60	100
2.	IV	19EL4WN	ENGLISH FOR INTEGRATED DEVELOPMENT	5	3	40	60	100
			TOTAL	20	12			

PART – III -MAJOR, ALLIED & ELECTIVES – 95 CREDITS

CORE COURSES : 64 CREDITS

S. NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CRS	CIA Mks	ESE Mks	TOT. Mks
1.	I	23ST1CC1	DESCRIPTIVE STATISTICS	5	5	40	60	100
2.		23ST1CC2	PROBABILITY THEORY	5	5	40	60	100
3.	II	23ST2CC3	DISCRETE PROBABILITY DISTRIBUTIONS	5	5	40	60	100
4.		23ST2CC4	MATRIX AND LINEAR ALGEBRA	5	5	40	60	100
5.	III	19ST3CC5	CONTINUOUS PROBABILITY DISTRIBUTIONS	6	4	40	60	100
6.		19ST3CC6	SAMPLING THEORY	6	4	40	60	100
7.	IV	19ST4CC7	ESTIMATION THEORY	6	4	40	60	100
8.		22ST4CC8	APPLIED STATISTICS	6	4	40	60	100
9.	V	19ST5CC9	TESTING OF HYPOTHESES	5	4	40	60	100
10.		19ST5CC10	DESIGN OF EXPERIMENTS	5	4	40	60	100
11.		19ST5CC11	DEMOGRAPHY	5	4	40	60	100
12.		19ST5CC12	REAL ANALYSIS	5	4	40	60	100

S. NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CRS	CIA Mks	ESE Mks	TOT. Mks
13.	VI	19ST6CC13	STATISTICAL QUALITY CONTROL	5	4	40	60	100
14.		19ST6CC14	STOCHASTIC PROCESSES	5	4	40	60	100
15.		19ST6CC15	ACTUARIAL STATISTICS	5	4	40	60	100

ALLIED- 10 CREDITS

S.NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CRS	CIA Mks	ESE Mks	TOT. Mks
1.	III	19G3ACST3	LINEAR PROGRAMMING	5	5	40	60	100
2.	IV	19G4ACST4	LINEAR ALGEBRA	5	5	40	60	100

ELECTIVES

S.No	SEM.	COURSE CODE	COURSE TITLE	HRS	CRS	CIA Mks	ESE Mks	TOT. Mks
1.	I	23G1GEST1	MATHEMATICS FOR STATISTICS	5	3	40	60	100
2.	II	23ST2EC2	REAL ANALYSIS	5	3	40	60	100
3.	V	19ST5ME1 & 19ST5ME2/ 22ST5ME3 & 22ST5ME4	COMPUTER PROGRAMMING IN C & C - PRACTICALS/ OBJECT ORIENTED PROGRAMMING WITH C++ & C++ PRACTICALS	3+2	3+2	40+40	60+60	100+100
4.	VI	19ST6ME5/ 19ST6ME6/ 19ST6ME7	NUMERICAL METHODS/ MULTIVARIATE ANALYSIS/ REGRESSION ANALYSIS	5	5	40	60	100

S.No	SEM.	COURSE CODE	COURSE TITLE	HRS	CRS	CIA Mks	ESE Mks	TOT. Mks
5.	VI	19ST6ME8/19ST6ME9/22ST6ME10	OPERATIONS RESEARCH/ INDUSTRIAL STATISTICS/ ECONOMETRICS	5	5	40	60	100

PART – IV – 20 CREDITS

- **VALUE EDUCATION**
- **ENVIRONMENTAL AWARENESS**
- **SKILL ENCHANCE COURSE**
- **FOUNDATION COURSE**

S.No	SEM.	COURSE CODE	COURSE TITLE	HRS	CRS	CIA Mks	ESE Mks	TOT. Mks
1.	I	23G1VE1	PERSONAL VALUES - VALUE EDUCATION (INCLUDING MEDITATION IN ACTION MOVEMENT)	1	1	40	60	100
2.		23ST1SE1	BASICS OF STATISTICS	2	2	40	60	100
3.		23ST1FC	BRIDGE COURSE IN STATISTICS	2	2	40	60	100
4.	II	23G2VE2	VALUES FOR LIFE	1	1	40	60	100
5.		23ST2SE2	BASICS OF STATISTICS	2	2	40	60	100
6.		23ST2SE3	STATISTICS PRACTICAL-I	2	2	40	60	100
7.	III	19G3EE1	ENVIRONMENTAL EDUCATION	1	1	40	60	100

S.No	SEM	COURSE CODE	COURSE TITLE					
8.		19ST3SB1	PRACTICAL STATISTICS – I	2	2	40	60	100
9.	IV	19G4EE2	ENVIRONMENTAL EDUCATION	1	1	40	60	100
10.		22ST4SB2	SAMPLING DISTRIBUTION	2	2	40	60	100
11.	V	23ST5SB3	PRACTICAL STATISTICS – II	2	2	40	60	100
12.		19ST5SB4	STATISTICAL SOFTWARE: SPSS	2	2	40	60	100
13.	VI	23ST6SB5	PRACTICAL STATISTICS – III	2	2	40	60	100
14.		19ST6SB6	STATISTICAL SOFTWARE: R	2	2	40	60	100

PART – V – 1 CREDIT

OFF-CLASS PROGRAMMES

SHIFT - II

S.No	SEM	COURSE CODE	COURSE TITLE	HRS	CREDIT	TOT. Mks
1.		21S4PED	Physical Education			
2.		21S4YRC	Youth Red Cross			
3.	I - IV	21S4NSS	NSS	30/ SEM	1	100
4.		21S4RTC	Rotaract			
5.		21S4WEC	Women Empowerment Cell			
6.		21S4ACUF	AICUF			

OFF-CLASS PROGRAMME

ADD-ON COURSES

COURSE CODE	Courses	HRS	CRS	Semester in which the course is offered	CIA Mks	ESE Mks	TOT. Mks
19UAD2CA	**COMPUTER APPLICATIONS**	40	2	I&II	40	60	100
19UADFCA	**ONLINE SELF LEARNING COURSE**-Foundation Course for Arts	40	3	I	50	-	50
19UADFCS	**ONLINE SELF LEARNING COURSE**-Foundation Course for Science	40	3	II	50	-	50
21UAD3ES	Professional Ethics	15	1	III	40	60	100
21UAD4ES	Personality Development	15	1	IV	40	60	100
21UAD5ES	Family Life Education	15	1	V	40	60	100
21UAD6ES	Life Skills	15	1	VI	40	60	100
19UAD5HR	Human Rights	15	2	V	40	60	100
	OUTREACH PROGRAMME-Reach Out to Society through Action **ROSA**	100	3	V & VI	-	-	100
	PROJECT	30	4	VI	40	60	100
	READING CULTURE	10/Semester	1	II-VI	-	-	-
	MOOC COURSES(Department Specific Courses/any other courses) * Students can opt other than the listed course from UGC-SWAYAM UGC / CEC	-	Minimum 2 Credits	-	-	-	-
	TOTAL		22 +				

EXTRA CREDIT COURSE

Course Code	Courses	Hrs.	Credits	Semester in which the course is offered	CIA Mks	ESE Mks	Total Marks
21ST2SL1	**SELF LEARNING COURSE for ADVANCED LEARNERS (offered for I UG)** Quantitative Aptitude & Data Interpretation		2	II	40	60	100
22ST4SL2	STATISTICS USING MS EXCEL		2	IV	40	60	100
19UGSLST1	**(offered for III UG)** **Official Statistics**	-	2	V & VI	40	60	100
19UGSLST2	**Biostatistics**						

I B.Sc STATISTICS
SEMESTER –I
For those who joined in 2023 onwards
Skill Development-100%

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USST	23ST1CC1	DESCRIPTIVE STATISTICS	Lecture	5	5

COURSE DESCRIPTION

This course introduces measurement of relationship in terms of quantitative and qualitative data.

COURSE OBJECTIVES

1. It explains the important concepts of statistics and statistical data.
2. It provides to formulate the visualization of frequency distribution.
3. Also they measure the averages, dispersions, lack of symmetry, moments, and relationship among variables.
4. Estimate and predict the unknown and future values.
5. Study of non-linear and consistency of the data.

UNIT-I MEASURES OF CENTRAL TENDENCY   (15Hrs)

Introduction-Definitions-Types - Mean-Median-Mode-Geometric mean-Harmonic Mean-Weighted mean - Merits and Demerits-Measures of Dispersion: Introduction – Definition – Types – Range - Quartile deviation - Mean deviation - Standard deviation - Co-efficient of variation – Lorenz curve - Merits and Demerits.

UNIT-III   SKEWNESS   (15Hrs)

Skewness: Introduction-Definition-Types-Karl Pearson's – Bowley's - Kelly's methods – Their merits and demerits. Kurtosis: Introduction-Definition-Types-Its merits and demerits. Moments: Introduction - Definition-Types - Raw, Central moments and their relations.

UNIT-III   CORRELATION ANALYSIS   (15Hrs)

Correlation analysis: Introduction - Definition - Types – Ungrouped and Grouped data – Probable error – properties - Rank correlation – Partial and Multiple correlations

UNIT-IV   REGRESSION ANALYSIS   (15Hrs)

1Regression analysis: Introduction - Definition – Regression Equations -Multiple regression - Principle of least squares for first degree, Second degree Exponential and Power curves.

UNIT-V   THEORY OF ATTRIBUTES   (15HRS)

Theory of Attributes: Introduction – Definition-Classes and Class frequencies-Consistency of data-Independence of attributes-Association of attributes-Yule's coefficient and -Coefficient of Colligation.

TEXT BOOK:

1. Gupta, S.P. (2017): Statistical Methods, Sultan Chand & Sons Pvt Ltd, New Delhi, 35th Revised Edition.

2. Gupta S.C and Kapoor, V.K. (2002). Fundamentals of Mathematical Statistics, Sultan Chand & Sons Pvt. Ltd., New Delhi

REFERENCE BOOK:

1. Goon A.M. Gupta. A.K. and Das Gupta, B (1987). Fundamental of Statistics, vol.2 World Press Pvt. Ltd., Kolkatta

2. G.U.Yule and M.G. Kendall (1956). An introduction to the theory of Statistics, Charles Griffin.

3. M.R. Spiegel (1961). Theory and problems of Statistics, Schaum's outline series.

4. Anderson, T.W. and Sclove SL. (1978). An introduction to statistical analysis of data, Houghton Miffin&co.

5. Pillai, R.S., and Bagavathi (2003): Statistics, S. Chand and Company Ltd., New Delhi.

e-books, tutorials on MOOC/SWAYAM courses on the subject

https://en.wikipedia.org/wiki/Statistics
https://en.wikipedia.org/wiki/Descriptive_statistics
https://socialresearchmethods.net/kb/statdesc.php
http://onlinestatbook.com/2/introduction/descriptive.html

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT-1 MEASURES OF CENTRAL TENDENCY				
1.1	Introduction- Definitions	2	Chalk & Talk	Black Board
1.2	Types - Mean- Median- Mode-	2	Chalk & Talk	Black Board
1.3	Geometric Mean- Harmonic Mean- Weighted mean - Merits and Demerits	3	Chalk & Talk	Black Board
1.4	Measures of Dispersion: Introduction – Definition	2	Chalk & Talk	Black Board
1.5	Types – Range - Quartile deviation	2	Chalk & Talk	Black Board
1.6	Mean deviation - Standard deviation	2	Chalk & Talk	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
1.7	Co-efficient of variation – Lorenz curve - Merits and Demerits.	2	Chalk & Talk	Black Board
UNIT-2 SKEWNESS				
2.1	Introduction-Definition-Types	2	Chalk & Talk	Black Board
2.2	Karl Pearson's – Bowley's-Kelly's methods – Their merits and demerits	3	Chalk & Talk	Black Board
2.3	Kurtosis: Introduction-Definition-Types-Its merits and demerits.	5	Chalk & Talk	Black Board
2.4	Moments: Introduction - Definition-Types - Raw, Central moments	5	Chalk & Talk	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
	and their relations.			
UNIT-3 CORRELATION ANALYSIS				
3.1	Introduction - Definition - Types	4	Chalk & Talk	Black Board
3.2	Ungrouped and Grouped data	4	Chalk & Talk	Black Board
3.3	Probable error – properties	3	Chalk & Talk	Black Board
3.4	Rank correlation – Partial and Multiple correlations	4	Chalk & Talk	Black Board
UNIT-4 REGRESSION ANALYSIS				
4.1	Introduction - Definition	3	Chalk & Talk	Black Board
4.2	Regression Equations -	3	Chalk & Talk	Black Board
4.3	Multiple regressions	3	Chalk & Talk	Black Board
4.4	Principle of least squares for	3	Chalk & Talk	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
	first degree, Second degree,			
4.5	Exponential and Power curves	3	Chalk & Talk	Black Board

UNIT-5 THEORY OF ATTRIBUTES

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
5.1	Introduction – Definition- Classes and Class frequencies	4	Lecture	PPT & White board
5.2	Consistency of data- Independence of attributes	4	Lecture	PPT & White board
5.3	Association of attributes	3	Chalk & Talk	Black Board
5.4	Yule's coefficient and Coefficient of Colligation	4	Chalk & Talk	Black Board

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1	T2	Quiz	Assignment	OBT/PPT				
	10 Mks.	10 Mks.	5 Mks.	5 Mks	5 Mks	35 Mks.	5 Mks.	40Mks.	

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids					
K1	2	2	-	-	-	4	-	4	10 %
K2	2	2	5	-	-	9	-	9	22.5 %
K3	3	3	-	-	5	11	-	11	27.5 %
K4	3	3	-	5	-	11	-	11	27.5 %
Non Scholastic	-	-	-	-	-		5	5	12.5 %
Total	10	10	5	5	5	35	5	40	100 %

CIA	
Scholastic	35
Non Scholastic	5
	40

C1	-	Test (CIA 1)		-	10 Mks
C2	-	Test (CIA 2)		-	10 Mks
C3	-	Assignment		-	5 Mks
C4	-	Open Book		-	5 Mks

		Test/PPT			
C5	-	Quiz		-	5 Mks
C6	-	Attendance		-	5 Mks

	SCHOLASTIC				NON – SCHOLASTIC	MARKS		
C1	**C2**	**C3**	**C4**	**C5**	**C6**	**CIA**	**ESE**	**Total**
10	**10**	**5**	**5**	**5**	**5**	**40**	**60**	**100**

EVALUATION PATTERN

COURSE OUTCOMES

On the successful completion of the course, students will be able to:

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Explain and evaluates various measure of central tendency	K3	PSO1 & PSO2
CO 2	Evaluates and interprets the nature of skewness and kurtosis	K1 & K2	PSO2 & PSO3
CO 3	Compute and interpret the spearman correlation coefficient	K1 & K3	PSO6
CO 4	Recognize regression analysis applications for purpose of description and prediction	K3	PSO4
CO 5	Explain the methods of association of attributes	K3 & K4	PSO5

Mapping of C0s with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	2	2	3	1	3	2
CO2	2	2	3	1	3	1
CO3	3	3	3	2	2	2
CO4	3	3	3	1	2	2
CO5	3	3	3	2	2	2

Mapping of C0s with POs

CO/PSO	PO1	PO2	PO3	PO4
CO1	2	3	1	1
CO2	2	2	1	2
CO3	2	2	3	2
CO4	3	3	2	2
CO5	3	3	3	2

Note: ♦ Strongly Correlated – **3**   ♦ Moderately Correlated – **2**

♦ Weakly Correlated -**1**

Forwarded By

Dr. V. Vanitha

I B.Sc STATISTICS
SEMESTER –I
For those who joined in 2023 onwards
Skill Development-100%

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USST	23ST1CC2	Probability Theory	Lecture	5	5

COURSE DESCRIPTION

This course introduces the concepts of functions and its properties, theorems related to random variables.

COURSE OBJECTIVES

To enable the students understand the concepts of random variable and distribution functions, expectation, conditional expectation and variance, generating functions, law of large numbers.

UNIT-I THEORY OF PROBABILITY   **(15 HRS.)**

Introduction-Basic terminology- Definition - Axiomatic approach – Types of Events - Conditional Probability - Addition and Multiplication theorems of Probability for 'two' and 'n' events (Statement and Proof) - Boole's inequality (Statement and Proof)- Bayes' theorem of Probability (Statement and Proof with numerical illustration -very simple problems)

.

UNIT-II   RANDOM VARIABLES AND DISTRIBUTION FUNCTIONS (15 HRS.)

Introduction - Discrete random variable: Probability mass function- Discrete distribution function, Properties. Continuous random variable : Probability density function and properties, measures of central tendency, dispersion, Skewness and kurtosis for continuous Probability distribution.

UNIT-III   Two dimensional random variables - Joint probability mass function- Marginal probability function, Conditional probability function. Two dimensional distribution functions-Marginal distribution functions - Joint density function-Marginal density function - Conditional distribution function - Conditional probability density function. Transformation of One - Dimensional and Two Dimensional random variable (concept only).

UNIT-IV   MATHEMATICAL EXPECTATIONS   (15 HRS.)

 Introduction- Expected value of a random variable (Discrete and Continuous)-Expected value of function of a random variable - Properties of Expectation-Properties of variance- Covariance. Inequalities involving expectation: Cauchy Schwartz and Markov   inequalities.

UNIT-V   GENERATING FUNCTIONS   (15 HRS.)

M.G.F-Properties-Uniqueness theorem - C.G.F-Properties- P.G.F-Properties. Characteristic Function: Properties–Inversion theorems (Statement only)- Uniqueness theorem (Statement only). Chebychev's Inequality (Statement and Proof). Law of Large Numbers (L.L.N): Convergence in probability - Properties: Weak L.L.N - properties-Bernoulli's L.L.N (Statement and Proof) - Khinchin's theorems (Statement only).

TEXT:

S.C.Gupta and V.K.Kapoor, *Fundamentals of Mathematical Statistics*, Sultan Chand & Sons, Revised edition (2015).

REFERENCES:

1. Arumugam and Thangapandi Isaac, *Statistics*, New Gamma publishing house (2012).
2. Rohatgi, V.K. (1984): An introduction to probability theory and mathematical statistics.

3. Hogg. R.V. and Craig. A.T. (1978) : Introduction to Mathematical Statistics, McGraw Hill Publishing Co. Inc. New York.

4. Mood A.M. Graybill, F.A. and Bose. D.C. (1974): Introduction to the theory of Statistics, McGraw Hill Publishing Co. Inc. New York.

5. Sanjay Arora and Bansilal (1989): New Mathematical Statistics, Satyaprakashan, New Delhi

e-books, tutorials on MOOC/SWAYAM courses on the subject

www.khanacademy.org/math/statistics-probability/random-variables-stats-library
https://ocw.mit.edu/courses/mathematics/18-440-probability-and-random-variables-spring-2014/

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT-I THEORY OF PROBABILITY				
1.1	Basic Terminology	4	Lecture	PPT & White board
1.2	Mathematical Probability	4	Chalk & Talk	Black Board
1.3	Mathematical Tools	4	Discussion	Black Board
1.4	Axiomatic Approach to Probability.	3	Chalk & Talk	Black Board
UNIT-II RANDOM VARIABLES AND DISTRIBUTION FUNCTIONS				

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
2.1	Extended Axiom of Addition and Multiplication	5	Discussion	Black Board
2.2	Boole's inequality	3	Chalk & Talk	Black Board
2.3	conditional probability	4	Chalk & Talk	Black Board
2.4	Bayes Theorem.	3	Chalk & Talk	Black Board
UNIT -III RANDOM VARIABLES AND DISTRIBUTION FUNCTIONS				
3.1	Distribution Function	4	Chalk & Talk	Black Board
3.2	Discrete Random Variable	3	Chalk & Talk	Black Board
3.3	Continuous Random Variable	3	Chalk & Talk	Black Board
3.4	Two Dimensional Rando	5	Chalk & Talk	Black Board

Modu le No.	Topic	No. of Lectur es	Teachi ng Pedago gy	Teac hing Aids
	m Variab les			
UNIT-IV MATHEMATICAL EXPECTATIONS				
4.1	Expec ted Value of Functi on of a Rando m Variab le	3	Chalk & Talk	Black Boar d
4.2	Proper ties of Expec tation	2	Chalk & Talk	Black Boar d
4.3	Proper ties of Varian ce	2	Chalk & Talk	Black Boar d
4.4	Covari ance and Correl ation	2	Chalk & Talk	Black Boar d
4.5	Mome nts of Bivari ate Proba bility Distri bution s	2	Chalk & Talk	Black Boar d
4.6	Condit ional Expec tation	2	Chalk & Talk	Black Boar d

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
4.7	Conditional Variance	2	Chalk & Talk	Black Board
UNIT -V GENERATING FUNCTIONS				
5.1	Moment Generating Function	3	Chalk & Talk	Black Board
5.2	Characteristics Function	3	Chalk & Talk	Black Board
5.3	Inversion Theorem	2	Chalk & Talk	Black Board
5.4	Necessary and Sufficient Condition for Independence of Random Variables in Terms of Characteristics Functions	3	Chalk & Talk	Black Board
5.5	Chebychve's	2	Chalk & Talk	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
	Inequality			
5.8	Convergence in Probability	2	Chalk & Talk	Black Board

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1 10 Mks.	T2 10 Mks.	Quiz 5 Mks.	Assignment 5 Mks	OBT/PPT 5 Mks	35 Mks.	5 Mks.	40Mks.	
K1	2	2	-	-	-	4	-	4	10 %
K2	2	2	5	-	-	9	-	9	22.5 %
K3	3	3	-	-	5	11	-	11	27.5 %
K4	3	3	-	5	-	11	-	11	27.5 %
Non Scholastic	-	-	-	-	-		5	5	12.5 %
Total	10	10	5	5	5	35	5	40	100 %

CIA	
Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

	SCHOLASTIC				NON – SCHOLASTIC	MARKS		
C1	C2	C3	C4	C5	C6	CIA	ESE	Total
10	10	5	5	5	5	40	60	100

C1 - Test (CIA 1) - 10 Mks

C2 - Test (CIA 2) - 10 Mks

C3 - Assignment - 5 Mks

C4 - Open Book Test/PPT - 5 Mks

C5 - Quiz - 5 Mks

C6 - Attendance - 5 Mks

The levels of CIA Assessment based on Revised Bloom's Taxonomy are :

K1- Remember, **K2**-Understand, **K3**-Apply, **K4**-Analyse

COURSE OUTCOMES

On the successful completion of the course, students will be able to:

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Identify from a probability scenario events that are simple, complementary, mutually exclusive, and independent.	K3	PSO1& PSO2
CO 2	Recognize multiplication rule for two independent events, the addition rule for union of two events, and the complement rule.	K1 & K2	PSO2 & PSO3
CO 3	Describe the main properties of probability distribution and random variables.	K1 & K3	PSO6
CO 4	Construct discrete and continuous random variables	K3	PSO4
CO 5	Apply general properties of the expectation and variance operators	K3 & K4	PSO5

Mapping of C0s with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	2	2	2	3	2	1
CO2	3	2	2	2	1	1
CO3	2	2	2	2	3	2
CO4	2	2	2	3	2	2
CO5	2	2	3	2	2	2

Mapping of C0s with POs

CO/PSO	PO 1	PO 2	PO 3	PO 4
CO 1	2	1	3	1
CO 2	2	3	2	1
CO 3	3	1	2	2
CO 4	3	1	2	2
CO 5	2	3	3	2

Note: ♦ Strongly Correlated – **3**   ♦ Moderately Correlated – **2**

          ♦ Weakly Correlated -**1**

Forwarded By

Dr. V. VANITHA

I B.Sc STATISTICS
SEMESTER –I
For those who joined in 2023 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USST	23ST1SE1/ 23ST2SE2	Basics Of Statistics	Lecture	2	2

COURSE DESCRIPTION

This course is designed to make the students learn the basics of statistics.

COURSE OBJECTIVES

To enable the students, understand the origin and the need of statistics and the statistical data.

UNIT–I   INTRODUCTION   (6 HRS)

Origin, meaning and functions of statistics – general uses - relation with other disciplines-

limitations and misuses of statistics.

UNIT–II COLLECTION AND SCRUTINY OF DATA   (6HRS)

Methods of collection: Complete enumeration – sample survey, Primary data - methods of collection - secondary data sources

UNIT–III MEASURESOFCENTRALTENDENCY(6HRS)

Arithmetic mean - weighted mean – median - mode

UNIT–IV MEASURESOFDISPERSION   (6HRS)

Measures of Dispersion: Introduction – Definition – Types – Range - Quartile deviation - Mean deviation - Standard deviation.

UNIT–V   SKEWNESS   (6HRS)

Introduction-Definition-Types-Karl Pearson's – Bowley's - Kelly's methods – Their merits and demerits.

TEXT BOOK:

1. S.P.Gupta, Statistical Methods, Sultan Chand & Sons, Revised edition (2014).

REFERENCES:

1.S.C.GuptaandV.K.Kapoor,FundamentalsofMathematicalStatistics-
SultanChand&Sons,Revisededition(2002).

2. Arumugam and Thangapandi Isaac, Statistics,New Gamma publishing house, (2006).

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 INTRODUCTION				
1.1	Origin, meaning and functions of statistics –--	2	Chalk & Talk	Black Board
1.2	general uses	1	Chalk & Talk	Black Board
1.3	relation with other disciplines	1	Chalk & Talk	Black Board
1.4	limitations and misuses of statistics	2	Chalk & Talk	Black Board
UNIT -2 COLLECTION AND SCRUTINY OF DATA				

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
2.1	Methods of collection: Complete enumeration	2	Chalk & Talk	Black Board
2.2	sample survey,Primary data	2	Chalk & Talk	Black Board
2.3	Methods of collection - secondary data sources	2	Chalk & Talk	Black Board
UNIT -3 MEASURESOFCENTRALTENDENCY				
3.1	Arithmetic	2	Chalk & Talk	Black Board
3.2	weighted mean	1	Chalk & Talk	Black Board
3.3	mean -– median - mode	3	Chalk & Talk	Black Board
UNIT -4 MEASURES OF DISPERSION				
4.1	Measures of Dispersion: Introduction – Definition –-	2	Chalk & Talk	Black Board
4.2	Types – Range - Quartile deviation	2	Discussion	Black Board
4,3	Mean deviation - Standard deviation.	2	Chalk & Talk	Black Board
UNIT -5 SKEWNESS				
5.1	Introduction-Definition-Types	1	Chalk & Talk	Black Board
5.2	Karl Pearson's	2	Chalk & Talk	Black Board
5.3	Bowley's - Kelly's methods	2	Chalk & Talk	Black Board
5.4	Their merits and demerits.	1	Chalk & Talk	Black Board

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1	T2	Quiz	Assignment	OBT/PPT				
	10 Mks.	10 Mks.	5 Mks.	5 Mks	5 Mks	35 Mks.	5 Mks.	40Mks.	
K1	2	2	-	-	-	4	-	4	10 %
K2	2	2	5	-	-	9	-	9	22.5 %

K3	3	3	-	-	5	11	-	11	27.5 %
K4	3	3	-	5	-	11	-	11	27.5 %
Non Scholastic	-	-	-	-	-		5	5	12.5 %
Total	10	10	5	5	5	35	5	40	100 %

CIA	
Scholastic	35
Non Scholastic	5
	40

	SCHOLASTIC					NON – SCHOLASTIC	MARKS		
C1	C2	C3	C4	C5	C6		CIA	ESE	Total
10	10	5	5	5	5		40	60	100

EVALUATION PATTERN

UG CIA Components

Nos

C1	-	Test (CIA 1)	-	10 Mks
C2	-	Test (CIA 2)	-	10 Mks
C3	-	Assignment	-	5 Mks
C4	-	Open Book Test/PPT	-	5 Mks
C5	-	Quiz	-	5 Mks
C6	-	Attendance	-	5 Mks

COURSE OUTCOMES

On the successful completion of the course, students will be able to:

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Summarize the origin of statistics and its relation with other disciplines	K2 & K4	PSO1& PSO2
CO 2	Explain the collection and scrutiny of Data	K3	PSO5
CO 3	Explain and evaluate various measure of central tendency	K3	PSO1& PSO2
CO 4	Examine the various measures of dispersion	K1, K2&K3	PSO3
CO 5	Evaluate skewness	K2 & K4	PSO2 &PSO3

Mapping of COs with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	3	3	2	2	2	2
CO2	2	2	3	2	2	2
CO3	2	2	3	2	2	2
CO4	3	2	2	3	2	2
CO5	2	2	3	2	2	2

Mapping of COs with POs

CO/PSO	PO1	PO2	PO3	PO4
CO1	3	2	1	2
CO2	2	3	1	2
CO3	3	2	2	2
CO4	2	3	2	2
CO5	3	2	2	2

Note: ☐ Strongly Correlated – **3** ☐ Moderately Correlated – **2** ☐ Weakly Correlated -**1**

Forwarded By

Dr. V.Vanitha

I B.Sc STATISTICS
SEMESTER –I
For those who joined in 2023onwards
Skill Development-100%

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USST	23ST1FC	Bridge Course in Statistics	Lecture	2	2

COURSE DESCRIPTION

This course is designed to make the students learn the basic concepts of statistics

COURSE OBJECTIVES

To enable the students to analyse the given data and make them solve simple real-life problems related to descriptive measures in statistics.

UNIT-I STATISTICS   [6 HRS]

Introduction - Definition – Functions - Applications - Limitations

UNIT-II ORGANIZING A STATISTICAL SURVEY   [6 HRS]

Planning the survey - Executing the survey

UNIT-III COLLECTION OF DATA   **[6 HRS]**

Primary and secondary data - Methods of collecting primary data - Sources of secondary data

UNIT-IV SAMPLING   **[6 HRS]**

Census and Sample methods. Classification-Types - Formation of frequency distribution-Tabulation - parts of a Table - Types.

UNIT-V DIAGRAMMATIC REPRESENTATION   **[6 HRS]**

Types- Graphical representation - Graphs of frequency distributions. Merits and Limitations of diagrams and graphs.

TEXT BOOK:

1. Gupta, S.P. (2017): Statistical Methods, Sultan Chand & Sons Pvt Ltd, New Delhi, 35th Revised Edition.

2. Gupta S.C and Kapoor, V.K. (2002). Fundamentals of Mathematical Statistics, Sultan Chand & Sons Pvt. Ltd., New Delhi

REFERENCE BOOK:

1. Goon A.M. Gupta. A.K. and Das Gupta, B (1987). Fundamental of Statistics, vol.2 World Press Pvt. Ltd., Kolkatta

2. G.U.Yule and M.G. Kendall (1956). An introduction to the theory of Statistics, Charles Griffin.

3. M.R. Spiegel (1961). Theory and problems of Statistics, Schaum's outline series.

4. Anderson, T.W. and Sclove SL. (1978). An introduction to statistical analysis of data, Houghton Miffin&co.

5. Pillai, R.S., and Bagavathi (2003): Statistics, S. Chand and Company Ltd., New Delhi

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1STATISTICS				
1.1	Introduction - Definition	1	Chalk & Talk	Black Board
1.2	Functions	2	Chalk & Talk	Black Board
1.3	Applications	2	Chalk & Talk	Black Board
1.4	Limitations	1	Chalk & Talk	Black Board
UNIT 2 ORGANIZING A STATISTICAL SURVEY				
2.1	Planning the survey	3	Chalk & Talk	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
2.2	Executing the survey	3	Chalk & Talk	Black Board
UNIT 3 COLLECTION OF DATA				
3.1	Primary and secondary data	2	Chalk & Talk	Black Board
3.2	Methods of collecting primary data	2	Chalk & Talk	Black Board
3.3	Sources of secondary data	2	Chalk & Talk	Black Board
UNIT 4 SAMPLING				
4.1	Census and Sample methods.	1	Chalk & Talk	Black Board
4.2	Classification-Types	1	Chalk &Talk	Black Board
4.3	Formation of frequency distribution-.	2	Chalk & Talk	Black Board
4.4	Tabulation - parts of a Table, Types	2	Chalk & Talk	Black Board
UNIT -5 DIAGRAMMATIC REPRESENTATION				
5.1	Types- Graphical representation.	2	Chalk & Talk	Black Board
5.2	- Graphs of frequency distributions	2	Discussion	Black Board
5.3	Merits and Limitations of diagrams and graphs	2	Chalk & Talk	Black Board

Levels	C1 T1 10 Mks.	C2 T2 10 Mks.	C3 Quiz 5 Mks.	C4 Assignment 5 Mks	C5 OBT/PPT 5 Mks	Total Scholastic Marks 35 Mks.	Non Scholastic Marks C6 5 Mks.	CIA Total 40Mks.	% of Assessment
K1	2	2	-	-	-	4	-	4	10 %
K2	2	2	5	-	-	9	-	9	22.5 %
K3	3	3	-	-	5	11	-	11	27.5 %
K4	3	3	-	5	-	11	-	11	27.5 %
Non Scholastic	-	-	-	-	-		5	5	12.5 %
Total	10	10	5	5	5	35	5	40	100 %

	SCHOLASTIC				NON – SCHOLASTIC	MARKS		
C1	C2	C3	C4	C5	C6	CIA	ESE	Total
10	10	5	5	5	5	40	60	100

CIA	
Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

UG CIA Components

C1	-	Test (CIA 1)	-	10 Mks
C2	-	Test (CIA 2)	-	10 Mks
C3	-	Assignment	-	5 Mks
C4	-	Open Book Test/PPT	-	5 Mks
C5	-	Quiz	-	5 Mks
C6	-	Attendance	-	5 Mks

COURSE OUTCOMES

On the successful completion of the course, students will be able to:

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Recognizes investigation, investigator, numerator and enumeration	K1	PSO1& PSO2
CO 2	Explain statistical survey	K3	PSO3
CO 3	Identifies the need of Classification and Tabulation in sampling	K1 & K2	PSO3
CO 4	Explain different methods of data collection	K1 & K2	PSO3
CO 5	Construct and analyse graphical display to summarize data	K3& K4	PSO3

Mapping of C0s with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	3	3	2	2	1	2
CO2	2	2	2	2	1	2
CO3	2	2	3	2	1	1
CO4	3	2	3	3	2	1
CO5	2	2	3	2	2	1

Mapping of COs with POs

CO/PSO	PO1	PO2	PO3	PO4
CO1	3	2	1	2
CO2	2	2	1	1
CO3	2	2	2	1
CO4	2	3	2	2
CO5	2	2	1	1

Note: ☐ Strongly Correlated – **3**   ☐ Moderately Correlated – **2**   ☐ Weakly Correlated -**1**

Forwarded By
Dr. V.Vanitha

I B.Sc STATISTICS
SEMESTER –II
For those who joined in 2023onwards

Skill Development-100%

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USST	23ST2CC3	Distribution Theory	Lecture	5	5

COURSE DESCRIPTION

This course introduces probability functions for random variables that are defined for different probabilistic situations.

COURSE OBJECTIVE

This course exposes students the various important discrete probability models and real life situations where these distributions provide appropriate models.

UNIT I BINOMIAL & NEGATIVE BINOMIAL DISTRIBUTION   (15 Hrs)

Binomial distribution – moments, recurrence relation, mean deviation, mode, moment generating function, characteristic function, cumulants. Fitting of Binomial Distribution. Poisson distribution – moments, mode, recurrence relation, moment generating function,

characteristic function, cumulants. Fitting of Poisson distribution. Negative binomial distribution – m.g.f., cumulants. Fitting of Negative binomial distribution

UNIT II GEOMETRIC & HYPERGEOMETRIC DISTRIBUTION (15 HRS)

Geometric distribution – lack of memory, moments, m.g.f.- Hypergeometric distribution – mean, variance, approximation to Binomial, recurrence relation – Multinomial distribution – m.g.f., mean and variance.

UNIT III NORMAL DISTRIBUTION   (15 HRS)

Normal Distribution – chief characteristics of the normal distribution and normal probability curve, mean, median, mode, m.g.f. characteristic function, moments, points of inflexion, mean deviation, Area property – Rectangular distribution – moments, m.g.f., characteristic function, mean deviation about mean.

UNIT IV BETA & GAMMA DISTRIBUTION   (15 HRS)

Memory less property – Gamma distribution – m.g.f., cumulants and central moments, reproductive property – Beta distribution – First kind and second kind – constants.

UNIT-V t, CHI-SQUARE AND F-DISTRIBUTIONS   (15 HRS)

Functions of Normal random variables leading to t, Chi-square and F-distributions (derivations, properties and interrelationships).

TEXT BOOK:

S.C.Gupta and V.K.Kapoor, *Fundamentals of Mathematical statistics*, Sultan Chand & Sons, Revised edition (2014).

REFERENCE BOOKS:

1. Arumugam and Thangapandi Isaac, *Statistics*, New Gamma publishing house, (2012).
2. S.P.Gupta, *Statistical Methods,* Sultan Chand & Sons, Revised edition (2014).
3. Mood, A.D. Graybill, F.A. and Boes, D.C (1974): Introduction to the Theory of Statistics, 3/e, Mc.Graw Hill, New York

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No.of Lectures	Teaching Pedagogy	Teaching Aids
UNIT-I BINOMIAL & NEGATIVE BINOMIAL DISTRIBUTION				
1.1	Moments of Bernoulli Distribution	2	Chalk &Talk	BlackBoard
1.2	Moments of Binomial Distribution	2	Chalk &Talk	Black Board

1.3	Relation for the Moments of Binomial Distribution– Factorial Moments of Binomial Distribution	4	Chalk &Talk	Black Board
1.4	Moment Generating Function of Binomial Distribution- Additive Property of Binomial Distribution	4	Chalk &Talk	Black Board
1.5	Recurrence Relation for Cumulants of Binomial Distribution	2	Discussion	Black Board
1.6	Probability Generating Function of Binomial Distribution	1	Chalk &Talk	Black Board
UNIT-2 GEOMETRIC & HYPERGEOMETRIC DISTRIBUTION				
2.1	Moments of Poisson Distribution	2	Chalk &Talk	Black Board
2.2	Mode of Poisson Distribution	2	Chalk &Talk	Black Board
2.3	Characteristic Function of Poisson Distribution	2	Chalk &Talk	Black Board
2.4	Cumulants of Poisson Distribution	2	Discussion	Black Board
2.5	Additive Property of Independent Poisson Variates	2	Chalk &Talk	Black Board
2.6	Moment Generating Function of Poisson Distribution	2	Chalk &Talk	Black Board
2.7	Probability Generating Function of Poisson Distribution	2	Chalk & Talk	Black Board
2.8	Recurrence Relation for the Probabilities of Poisson Distribution.	1	Chalk &Talk	Black Board
UNIT-3 NORMAL DISTRIBUTION				
3.1	Moment Generating Function of Negative Binomial Distribution	3	Chalk &Talk	Black Board

3.2	Cumulants of Negative Binomial Distribution	3	Chalk &Talk	Black Board
3.3	Poisson distribution as a Limiting case of Negative Binomial Distribution	3	Chalk &Talk	Black Board
3.4	Probability Generating Function of Negative Binomial Distribution	3	Chalk &Talk	Black Board
3.5	Deduction of Moments of Negative Binomial Distribution from those of Binomial Distribution	3	Chalk &Talk	Black Board
UNIT-4 BETA & GAMMA DISTRIBUTION				
4.1	Moments of Geometric Distribution	5	Chalk &Talk	Black Board
4.2	Moment Generating Function of Geometric Distribution	4	Chalk &Talk	Black Board
4.3	Factorial Moments of the Hypergeometric Distribution	3	Chalk &Talk	Black Board
4.4	Recurrence Relation for the Hypergeometric Distribution.	3	Chalk &Talk	Black Board
UNIT-5 t, CHI-SQUARE AND F-DISTRIBUTIONS				
5.1	Moments of Multinomial Distribution	5	Chalk &Talk	Black Board
5.2	Moment Generating Function of Power Series Distribution	6	Chalk &Talk	Black Board
5.3	Recurrence Relation for Cumulants of Power Series Distribution.	4	Chalk &Talk	Black Board

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1 10 Mks.	T2 10 Mks.	Quiz 5 Mks.	Assignment 5 Mks	OBT/PPT 5 Mks	35 Mks.	5 Mks.	40Mks.	
K1	2	2	-	-	-	4	-	4	10 %
K2	2	2	5	-	-	9	-	9	22.5 %
K3	3	3	-	-	5	11	-	11	27.5 %
K4	3	3	-	5	-	11	-	11	27.5 %
Non Scholastic	-	-	-	-	-		5	5	12.5 %

	SCHOLASTIC					NON – SCHOLASTIC	MARKS		
C1	C2	C3	C4	C5		C6	CIA	ESE	Total
10	10	5	5	5		5	40	60	100

CIA	
Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

C1	-	Test (CIA 1)	-	10 Mks
C2	-	Test (CIA 2)	-	10 Mks
C3	-	Assignment	-	5 Mks
C4	-	Open Book Test/PPT	-	5 Mks
C5	-	Quiz	-	5 Mks
C6	-	Attendance	-	5 Mks

COURSE OUTCOMES

On the successful completion of the course, students will be able to:

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL(ACCORDINGTOREVISEDBLOOM'STAXONOMY)	PSOsADDRESSED
CO1	Recognize cases where the Binomial distribution could be an appropriate model.	K1	PSO2
CO2	Able to apply the Poisson distribution to a variety of problems.	K3	PSO5
CO3	Explore the key properties such as the moment generating function, cumulant of a negative binomial distribution.	K1&K3	PSO3

| CO4 | Understand and derive the formula for the geometric and hypergeometric probability mass function. | K1,K2&K3 | PSO4 |
| CO5 | Explain and evaluate multinomial and power series distribution | K2&K4 | PSO6 |

Mapping of COs with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	3	3	2	2	2	2
CO2	2	2	2	2	3	2
CO3	2	2	3	2	2	2
CO4	2	2	3	3	2	2
CO5	2	2	3	2	2	3

Mapping of COs with POs

CO/PSO	PO1	PO2	PO3	PO4
CO1	3	2	3	1
CO2	2	3	1	1
CO3	2	2	2	3
CO4	1	3	2	2
CO5	1	3	2	2

Note: ☐ Strongly Correlated – **3**   ☐ Moderately Correlated – **2**   ☐ Weakly Correlated -**1**

Forwarded By

Dr. V.Vanitha

I B.Sc STATISTICS
SEMESTER –II
For those who joined in 2023 onwards
Skill Development-100%

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USST	23ST2CC4	Matrix and Linear Algebra	Lecture	5	5

COURSE DESCRIPTION

This course will focus on properties of matrix and their applications

COURSE OBJECTIVES

To study the basic operations of transpose and inverse of matrices,To know the structure of orthogonal and unitary matrices and To know and to apply the concepts of vector space and matrix polynomials

UNITI OPERATIONS OF MATRICES   **[15 HRS]**

Matrices-Transpose - Conjugate transpose- Reversal law for the transpose and conjugate transpose. Adjoint of a matrix, Inverse of a matrix, Singular and Non -Singular matrices

UNIT II TRANSACTIONS OF MATRICES   **[15 HRS]**

Reversal law for the inverse of product of two matrices. Commutativity of inverse and transpose of matrix, Commutativity of inverse and conjugate transpose of matrix, Orthogonal and Unitary Matrices, Product of unitary matrices, Partitioning of matrices.

UNIT III RANK OF A MATRIX   **[15 HRS]**

Rank of a matrix, Echelon form, Rank of transpose, Elementary transformations, Elementary matrices, Invariance of rank through elementary transformations, Reduction to Normal form, Equivalent matrices.

UNIT IV VECTORSPACE   **[15 HRS]**

Vector space – Linear Dependence - Basis of a vector space –Sub-space - Properties of Linearly Independent and Dependent systems, Row and Column spaces, Equality of Row and Column ranks, Rank of Sum and Product of matrices

UNIT-V MATRIX POLYNOMIALS   **[15 HRS]**

Matrix polynomials, Characteristic roots and vectors,Relation between characteristic roots and characteristic vectors, Algebraic and Geometric multiplicity, Nature of characteristic roots in case of special matrices, Cayley- Hamilton theorem.

TEXT BOOK:

1. Vasishtha.A.R (1972):   Matrices, Krishna prakashan Mandir, Meerut.

REFERENCE BOOK:

1. Shanthinarayan, (2012) : A Text Book of Matrices, S.Chand & Co, New Delhi

2. M.L.Khanna (2009), Matrices, Jai Prakash Nath & Co

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 OPERATIONSOFMATRICES				
1.1	Matrices-Transpose - Conjugate transpose	4	Chalk & Talk	Black Board
1.2	Reversal law for the transpose and conjugate transpose	4	Chalk & Talk	Black Board
1.3	Adjoint of a matrix, Inverse of a matrix	4	Chalk & Talk	Black Board
1.4	Singular and Non -Singular matrices	3	Chalk & Talk	Black Board
UNIT -2 TRANSACTIONS OF MATRICES				
2.1	Reversal law for the inverse of product of two matrices.,	3	Chalk & Talk	Black Board
2.2	Commutativity of inverse and transpose of matrix,	3	Chalk &Talk	Black Board
2.3	Commutativity of inverse and conjugate transpose of matrix	3	Chalk & Talk	Black Board
2.4	Orthogonal and Unitary Matrices	3	Chalk & Talk	Black Board
2.5	Product of unitary matrices, Partitioning of matrices.	3	Chalk & Talk	Black Board
UNIT -3 RANK OF A MATRIX				
3.1	Rank of a matrix, Echelon form, Rank of transpose, Elementary transformations,	5	Chalk & Talk	Black Board
3.2	Elementary matrices, Invariance of rank through elementary transformations,	5	Chalk & Talk	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
3.3	Reduction to Normal form, Equivalent matrices	5	Chalk & Talk	Black Board
UNIT -4 VECTOR SPACE				
4.1	Vector space – Linear Dependence	3	Chalk & Talk	Black Board
4.2	Basis of a vector space –Sub-space	3	Discussion	Black Board
4.3	Properties of Linearly Independent and Dependent systems, Row and Column spaces	3	Chalk & Talk	Black Board
4.4	Equality of Row and Column ranks	3	Chalk & Talk	Black Board
4.5	Rank of Sum and Product of matrices	3	Chalk & Talk	Black Board
UNIT -5 MATRIX POLYNOMIALS				
5.1	Matrix polynomials, Characteristic roots and vectors	3	Chalk & Talk	Black Board
5.2	Relation between characteristic roots and characteristic vectors	3	Chalk & Talk	Black Board
5.3	Algebraic and Geometric multiplicity	3	Chalk & Talk	Black Board
5.4	Nature of characteristic roots in case of special matrices	3	Chalk & Talk	Black Board
5.5	Cayley- Hamilton theorem	3	Chalk & Talk	Black Board

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1	T2	Quiz	Assignment	OBT/PPT				
	10 Mks.	10 Mks.	5 Mks.	5 Mks	5 Mks	35 Mks.	5 Mks.	40Mks.	
K1	2	2	-	-	-	4	-	4	10 %

	C1	C2	C3	C4	C5	C6	CIA	ESE	Total	
K2	2	2	5	-	-	9	-		9	22.5 %
K3			SCHOLASTIC			NON – SCHOLASTIC	MARKS			7.5 %
K4	3	3	-	5	-	11	-		11	27.5 %
Non Scholastic	10	10	5	5	5	5	40	60	100	12.5 %
Total	10	10	5	5	5	35	5		40	100 %

CIA	
Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

UG CIA Components

C1	-	Test (CIA 1)	-	10 Mks
C2	-	Test (CIA 2)	-	10 Mks
C3	-	Assignment	-	5 Mks
C4	-	Open Book Test/PPT	-	5 Mks
C5	-	Quiz	-	5 Mks
C6	-	Attendance	-	5 Mks

On the successful completion of the course, students will be able to:

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Do basic operations of matrices	K2 & K4	PSO1& PSO2
CO 2	Understand various transactions of matrices and its applications	K3	PSO5
CO 3	Able to understand various properties of matrices	K3	PSO1& PSO2
CO 4	Able to understand vector space, eigen vector and its applications	K1, K2&K3	PSO3
CO 5	Able to understand vector and matrix applications	K2 & K4	PSO2 &PSO3

Mapping of C0s with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	2	3	2	2	2	2
CO2	2	2	2	2	1	1
CO3	1	2	2	2	1	1
CO4	2	2	1	1	2	1
CO5	2	2	1	2	2	1

Mapping of C0s with POs

CO/PSO	PO1	PO2	PO3	PO4
CO1	1	2	1	1
CO2	2	3	1	1
CO3	2	2	2	1

CO4	1	3	2	2
CO5	1	3	1	1

Note: ☐ Strongly Correlated – **3** ☐ Moderately Correlated – **2** ☐ Weakly Correlated -**1**

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I B.Sc STATISTICS

SEMESTER –II

For those who joined in 2023 onwards

Skill Development-100%

</div>

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USST	**23ST2EC2**	**Real Analysis**	**Lecture**	**5**	**3**

COURSE DESCRIPTION

This course introduces the basic concepts in analysis and to enable the students understand fundamental ideas and theorems in analysis

COURSE OBJECTIVES

To enable the students, understand the basic concepts of sequences and series, connectedness and compactness and proof techniques

UNIT I REAL VALUED FUNCTIONS   **(12 Hrs)**

Operations on sets, Functions, Real valued functions, Equivalence, Countability, Real Numbers, Cantor set, Least Upper Bounds, Greatest Lower Bound.

UNIT II SEQUENCE   **(12 Hrs)**

Definition of Sequence, Subsequence, Limit of a sequence, Convergent and Divergent sequences, Oscillating sequence, Bounded and Monotone sequences, Operations on convergent sequences, Limit Infimum, Limit Supremum, Cauchy sequences, Summability of sequences.

UNIT III SERIES OF REAL NUMBERS   **(12 Hrs)**

Definition of Series, Convergent and Divergent series, series with nonnegative terms, alternating series, conditional convergence, absolute convergences and test for absolute convergence

UNIT -IV LIMITS   **(12 Hrs)**

Limit of a function on the real line, Increasing and Decreasing functions, Continuous function, Operations on continuous functions, Composition of continuous functions, Derivatives, Derivative and continuity, Rolle's Theorem, Mean value theorem, Taylor's theorem

UNIT-V RIEMANN INTEGRAL   **(12 Hrs)**

Concept of Riemann Integral, Refinement of partition, Upper and Lower sums, Upper integral and Lower Integral Riemann integrability, Necessary and Sufficient condition for Riemann integrable, Properties of Riemann integrals, Fundamental theorem

TEXT:

Richard R. Goldberg, Methods of Real Analysis**,** Oxford & IBH Publishing co. Pvt. Ltd.

REFERENCES:

1. S. Arumugam and A. Thangapandi Issac, ModernAnalysis
2. Shanthinarayan, (2012): Real Analysis, S.Chand & Co, New Delhi
3. Walter Rudin, Mathematical Analysis, MC-craw hill international, Third edition.

e-books, tutorials on MOOC/SWAYAM courses on the subject

https://tutorial.math.lamar.edu/classes/calci/thelimit.aspx

https://www.mathsisfun.com/calculus/derivatives-introduction.html

https://www.math.ucdavis.edu/~hunter/m125b/ch1.pdf

https://math.hmc.edu/calculus/hmc-mathematics-calculus-online-tutorials/single-variable-calculus/taylors-theorem/

http://www.ms.uky.edu/~droyster/courses/fall06/PDFs/Chapter06.pdf

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 REAL VALUED FUNCTIONS				
1.1	Real valued functions	3	Chalk & Talk	Black Board
1.2	equivalence - countability- real numbers	3	Chalk & Talk	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
1.3	least upper bound- definition of sequence and subsequence	3	Chalk & Talk	Black Board
1.4	limit of a sequence.	3	Chalk & Talk	Black Board
UNIT -2 SEQUENCES				
2.1	Convergent sequences divergent sequences-	3	Chalk & Talk	Black Board
2.2	bounded sequences-monotone sequences-	2	Chalk &Talk	Black Board
2.3	operations on convergent sequences-	2	Chalk & Talk	Black Board
2.4	operations on divergent sequences-	2	Chalk & Talk	Black Board
2.5	Cauchy sequences	3	Chalk & Talk	Black Board
UNIT -3 SERIES OF REAL NUMBERS				
3.1	Series- convergence and divergence of series	3	Chalk & Talk	Black Board
3.2	series with non-negative terms	3	Chalk & Talk	Black Board
3.3	alternating series	1	Chalk & Talk	Black Board
3.4	conditional convergence and absolute convergence-	3	Chalk & Talk	Black Board
3.5	test for absolute convergence	2	Chalk & Talk	Black Board
UNIT -4 LIMITS				
4.1	Limit of a function on the real line-	6	Chalk & Talk	Black Board
4.2	Increasing and Decreasing functions	6	Discussion	Black Board
UNIT -5 RIEMANN INTEGRAL				
5.1	Concept of Riemann Integral,	2	Chalk & Talk	Black Board
5.2	Refinement of partition, Upper and Lower sums,	3	Chalk & Talk	Black Board
5.3	Upper integral and Lower Integral Riemann integrability,	2	Chalk & Talk	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
5.4	Necessary and Sufficient condition for Riemann integrable,	3	Chalk & Talk	Black Board
5.5	Properties of Riemann integrals, Fundamental theorem	2	Chalk & Talk	Black Board

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1 10 Mks.	T2 10 Mks.	Quiz 5 Mks.	Assignment 5 Mks	OBT/PPT 5 Mks	35 Mks.	5 Mks.	40Mks.	
K1	2	2	-	-	-	4	-	4	10 %
K2	2	2	5	-	-	9	-	9	22.5 %
K3	3	3	-	-	5	11	-	11	27.5 %
K4	3	3	-	5	-	11	-	11	27.5 %
Non Scholastic	-	-	-	-	-		5	5	12.5 %
Total	10	10	5	5	5	35	5	40	100 %

CIA	
Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

C1	-	Test (CIA 1)	-	10 Mks
C2	-	Test (CIA 2)	-	10 Mks
C3	-	Assignment	-	5 Mks
C4	-	Open Book Test/PPT	-	5 Mks
C5	-	Quiz	-	5 Mks
C6	-	Attendance	-	5 Mks

	SCHOLASTIC				NON – SCHOLASTIC	MARKS		
C1	**C2**	**C3**	**C4**	**C5**	**C6**	**CIA**	**ESE**	**Total**
10	**10**	**5**	**5**	**5**	**5**	**40**	**60**	**100**

COURSE OUTCOMES

On the successful completion of the course, students will be able to:

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Can do basic operations of sets and understand set functions	K2 & K4	PSO1& PSO2
CO 2	Understands sequence and its convergence	K3	PSO5
CO 3	Understands series and its convergence	K3	PSO1& PSO2
CO 4	Identifies real valued functions and its discontinuity	K1, K2&K3	PSO3

CO 5	Understands Necessary and Sufficient condition for Riemann integrable	K2 & K4	PSO2 &PSO3

Mapping of C0s with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	3	3	2	2	2	2
CO2	2	3	2	2	2	2
CO3	2	2	3	2	2	2
CO4	2	2	3	2	2	2
CO5	2	2	3	2	2	2

Mapping of C0s with POs

CO/PSO	PO1	PO2	PO3	PO4
CO1	2	3	2	2
CO2	2	3	2	2
CO3	2	3	2	2
CO4	2	3	2	2
CO5	2	3	2	2

Note: ☐ Strongly Correlated – **3** ☐ Moderately Correlated – **2** ☐ Weakly Correlated -**1**

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I B.Sc STATISTICS

SEMESTER –II

For those who joined in 2023 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USST	23ST2SE3	Statistics Practical I	Lecture	2	2

COURSE DESCRIPTION

The course provides problems related to measure of central tendency, measure of dispersion, and measures of association of attributes.

COURSE OBJECTIVES

To expose the students the analysis of statistical techniques in real life situations.

1. Problems based on measure of central tendency
2. Problems based on measure of dispersion.
3. Problems based on moments, skewness and kurtosis
4. Computation of Karl Pearson correlation co-efficient.
5. Correlation coefficient for a bivariate frequency distribution.
6. Concurrent deviation
7. Rank correlation.
8. Regression Equations.
9. Computation of various measures of associations of attributes.
10. Sampling Theory – Simple Random sampling, Stratified Random Sampling, Systematic Random Sampling

TEXT:

1. S.C.Gupta and V.K.Kapoor, *Fundamentals of Mathematical statistics*, Sultan Chand & Sons, Revised edition (2002).

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1	T2	Quiz	Assignment	OBT/PPT				

	10 Mks.	10 Mks.	5 Mks.	5 Mks	5 Mks	35 Mks.	5 Mks.	40Mks.	
K1	2	2	-	-	-	4	-	4	10 %
K2	2	2	5	-	-	9	-	9	22.5 %
K3	3	3	-	-	5	11	-	11	27.5 %
K4									7.5 %
Non Scholastic									12.5 %
Total	10	10	5	5	5	5	40	60 100	100 %

	SCHOLASTIC					NON – SCHOLASTIC	MARKS		
	C1	C2	C3	C4	C5	C6	CIA	ESE	Total
Total	10	10	5	5	5	5	40	60	100

UG CIA Components

CIA	
Scholastic	**35**
Non Scholastic	**5**
	40

C1	-	Test (CIA 1)	-	10 Mks
C2	-	Test (CIA 2)	-	10 Mks
C3	-	Assignment	-	5 Mks
C4	-	Open Book Test/PPT	-	5 Mks
C5	-	Quiz	-	5 Mks
C6	-	Attendance	-	5 Mks

EVALUATION PATTERN

COURSE OUTCOMES

On the successful completion of the course, students will be able to:

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Calculate measures of central tendency	K1	PSO1& PSO2
CO 2	Classify measures of dispersion, skewness and kurtosis	K1, K2	PSO5 & PSO6
CO3	Compute correlation, regression and measures of association of attributes	K3	PSO4 & PSO5
CO4	Recognise and solve problems on binomial, poisson and normal distribution	K3	PSO4&PSO5
CO5	Able to apply geometric and hyper geometric distribution	K1	PSO6

Mapping of C0s with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	3	3	2	2	2	2
CO2	2	3	2	2	2	2
CO3	2	2	3	2	2	2
CO4	2	2	3	2	2	2
CO5	2	2	3	2	2	2

Mapping of COs with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	2	3	3	3
CO2	2	3	2	2
CO3	2	3	2	2
CO4	2	3	3	2
CO5	2	3	2	2

Note: ☐ Strongly Correlated – **3** ☐ Moderately Correlated – **2** ☐ Weakly Correlated -**1**

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CO2	2	2	2	3
CO3	2	2	2	3
CO4	2	3	2	2
CO5	2	2	2	3

Note: ♦ Strongly Correlated – **3**   ♦ Moderately Correlated – **2**   ♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Dr. E. Helena**
2. **Mrs. J. Annaal Mercy**

Forwarded By

Dr.E.Helena

III B.Sc. STATISTICS
SEMESTER V
Forthosewhojoinedin2021onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USST	22ST5ME4	C++ Practicals	Practical	2	2

1. To find the area of a square

2. To find the area of a circle

3. To find the area of a triangle

4. To find Simple interest

5. Solving Quadratic equations

6. Checking primes

7. Arranging numbers in ascending order

8. Reversing digits of a number

9. Finding the values of ncr, npr.

10. Palindrome

11. Matrix addition

12. Matrix multiplication

13. Transpose of a matrix

14. Trace of a matrix

15. Alphabeting names

16. Mean and Standard deviation

17. To find Correlation Coefficient

18. Straight line fitting by the method of least squares

19. To print nth Fibonacci number

20. To read a series of words from a terminal

III B.Sc STATISTICS

SEMESTER –V

(For those who joined in 2021 onwards)

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USST	23ST5SB3	Practical Statistics - II	Lecture & Practical	2	2

COURSE DESCRIPTION

The course provides an application based on Sampling theory, MLEs, Analysis of time series and index numbers

COURSE OBJECTIVES

To expose the students to the analysis of statistical techniques in real life situations.

COURSE OUTCOMES

On the successful completion of the course, students will be able to:

CO1. Analyze the problems based on confidence interval for proportions, mean, variances and correlation coefficient.

CO2. Apply and interpret the methods of curve fitting and time series.

CO3. Analyze the problem based on sampling.

1. Simple random sampling with & without replacement.

2. Comparison of simple and stratified with systematic sampling method

3. Ratio Method

4. Regression estimator method

5. Confidence interval for proportions means and variances based on Normal distribution.

6. Confidence intervals for means, variances, correlation coefficient

7. Problems based on MLEs.

8. Fitting of a straight line, second degree and Parabola, exponential

9. Analysis of Time Series

10. Index Numbers - Chain index numbers-consumer price index numbers

CIA	
Scholastic	**35**
Non Scholastic	**5**
	40

	SCHOLASTIC				NON – SCHOLASTIC	MARKS		
C1	**C2**	**C3**	**C4**	**C5**	**C6**	**CIA**	**ESE**	**Total**
10	**10**	**5**	**5**	**5**	**5**	**40**	**60**	**100**

EVALUATION PATTERN

UG CIA Components

The levels   **of   CIA**

C1	-	Test (CIA 1)	-	10 Mks
C2	-	Test (CIA 2)	-	10 Mks
C3	-	Assignment	-	5 Mks
C4	-	Open Book Test/PPT	-	5 Mks
C5	-	Quiz	-	5 Mks
C6	-	Attendance	-	5 Mks

Assessment based on Revised Bloom's Taxonomy are :

   K1- Remember**,   K2-**Understand**,   K3-**Apply**,   K4-**Analyse

COURSE OUTCOMES

On the successful completion of the course, students will be able to:

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Analyze the problems based on confidence interval for proportions, mean, variances and correlation coefficient	K1	PSO1& PSO2
CO 2	Apply and interpret the methods of curve fitting and time series.	K1, K2	PSO5 & PSO6
CO3	Analyze the problem based on sampling.	K3	PSO4 & PSO5

Mapping of C0s with PSOs

CO/ PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	3	3	2	2	2	2
CO2	2	3	2	2	2	2
CO3	2	2	3	2	2	2
CO4	2	2	2	2	2	2
CO5	2	2	3	2	2	2

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	3	3	3
CO2	3	3	2	2
CO3	3	2	2	3
CO4	1	3	2	3

CO5	2	2	1	2

Note: ♦ Strongly Correlated – **3**   ♦ Moderately Correlated – **2**   ♦ Weakly Correlated -**1**

COURSEDESIGNER:

1. **Dr.P.Vetriselvi**

2. **Mrs.K.Bhuvaneswar**

ForwardedBy

III B.Sc STATISTICS

SEMESTER –VI

(For those who joined in 2021 onwards)

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USST	23ST6SB5	Practical Statistics - III	Lecture & Practical	2	2

COURSE DESCRIPTION

The course provides an application related to the testing of hypothesis, design of experiments, demography and Actuarial statistics

COURSE OBJECTIVES

To expose the students to the analysis of statistical techniques in real life situations.

COURSE OUTCOMES

On the successful completion of the course, students will be able to:

CO1. Analyze the problems based on testing of hypothesis

CO2. Examine various non parametric tests.

CO3. Apply and interpret the methods of ANOVA, factorial experiments, CRD, RBD and LSD.

1. Non-Parametric test-Sign test, Wilcoxon test, Mann-Whitney U test, Median test, Run test, Kolmogorov- Smirnov one sample test, Kruskal-Wallis test.
2. ANOVA-One way &Two way
3. Design of experiments-CRD,RBD,LSD
4. Missing Plot
5. Factorial experiment-experiments with completely confounding
6. Factorial experiment-experiments with partially confounding

7. Fertility measurement-CBR-TFR
8. Mortality measurements –CDR-Infant mortality rate
9. Construction of Life tables.
10. Premiums- general principles-natural premiums- office & net premiums, Policy Values –surplus.

CIA	
Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

	SCHOLASTIC				NON – SCHOLASTIC	MARKS		
C1	C2	C3	C4	C5	C6	CIA	ESE	Total
10	10	5	5	5	5	40	60	100

UG CIA Components

C1	-	Test (CIA 1)	-	10 Mks
C2	-	Test (CIA 2)	-	10 Mks
C3	-	Assignment	-	5 Mks
C4	-	Open Book Test/PPT	-	5 Mks
C5	-	Quiz	-	5 Mks
C6	-	Attendance	-	5 Mks

COURSE OUTCOMES

On the successful completion of the course, students will be able to:

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Analyze the problems based on testing of hypothesis	K1	PSO1& PSO2
CO 2	Examine various non parametric tests	K1, K2	PSO5 & PSO6
CO3	Apply and interpret the methods of ANOVA, factorial experiments, CRD, RBD and LSD.	K3	PSO4 & PSO5

MappingofC0swithPSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	3	3	2	2	2	2
CO2	3	3	2	2	2	2
CO3	2	2	2	2	3	3

MappingofC0swithPOs

CO/PSO	PO1	PO2	PO3	PO4
	3	3	2	3
	2	1	3	2
	3	3	1	1

CO1				
CO2				
CO3				

Note: ♦StronglyCorrelated–**3**

♦ModeratelyCorrelated–**2**

♦ WeaklyCorrelated-**1**

COURSEDESIGNER:

1. **Dr.P.Vetriselvi**

2. **Ms. D.K.Pon Oviya**

ForwardedBy

Dr.E.Helena