FATIMA COLLEGE (AUTONOMOUS)

Re-Accredited with "A++"Grade by
NAAC(IVCycle)
Maryland, Madurai- 625 018, Tamil Nadu,India

NAME OF THE DEPARTMENT: STATISTICS

NAME OF THE PROGRAMME: B.Sc. STATISTICS

PROGRAMME CODE : USST

ACADEMIC YEAR :2022-2023

VISIONOFTHEDEPARTMENT

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

MISSIONOFTHEDEPARTMENT

Todevelopstatisticalandprobabilistictheoriesandtechniquesandtopropagatestatisticalknowledgethroughteaching and outreach programmes, in order to serve the needsofthesociety.

PROGRAMMEEDUCATIONALOBJECTIVES(PEO)

AgraduateofB.Sc.STATISTICSprogrammeafterfiveyearswillbe

PEO1	Ourgraduateswillbeacademic,digitalandinformationliterates, creative,inquisitive,innovativeanddesirousforthe“more”inallaspects
PEO2	They will be efficient individual and team performers,exhibitingprogress,flexibility,transparencyandaccountabilityintheirprofessionalwork
PEO3	The graduates will be effective managers of all sorts ofreal–lifeandprofessionalcircumstances,makingethical decisions, pursuing excellencewithin thetimeframeworkanddemonstratingaptleadershipskills
PEO4	Theywillengagelocallyandgloballyevincing socialandenvironmentalstewardshipdemonstratingcivicresponsibilities and employing right skills at the rightmoment.

GRADUATEATTRIBUTES(GA)

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

I. SOCIALCOMPETENCE	
GA1	Deepdisciplinaryexpertisewithawiderangeofacademicanddigitalliteracy
GA2	Honecreativity,passionforinnovationandaspireexcellence
GA3	Enthusiasmtowardsemancipationandempowermentofhumanity
GA4	Potentialsofbeingindependent
GA5	Intellectualcompetenceandinquisitivenesswithproblemsolvingabilitiesbefittingthefieldofresearch
GA6	Effectivenessindifferentformsofcommunicationstobeemployedinpersonalandprofessionalenvironmentsthroughvariedplatforms
GA7	Communicativecompetencewithcivic,professionalandcyberdignityanddecorum
GA8	Integrityrespectingthediversityandpluralisminsocieties,culturesandreligions
GA9	All–inclusiveskillsetstointerpret,analyseandsolvesocialandenvironmentalissues in diverseenvironments
GA10	Selfawarenessthatwouldenablethemtorecognisetheiruniquenessthroughcontinuousself-assessmentinordertofaceandmakechangesbuildingontheirstrengthsandimprovingtheirweaknesses
GA11	Finessetoco-operateexhibitingteam-spiritwhile

	workingingroupstoachievegoals
GA12	Dexterityinself-managementtocontroltheirselvesinattainingthekindoflifethattheydreamfor
GA13	Resiliencetoriseupinstantlyfromtheirintimidatingsetbacks
GA14	Virtuosity to use their personal and intellectualautonomyinbeinglife-longlearners
GA15	Digitallearningandresearchattributes
GA16	Cybersecuritycompetencereflectingcompassion,careandconcerntowardsthemarginalised
GA17	Rectitudetousedigitaltechnologyreflectingcivicandsocialresponsibilitiesinlocal,nationalandglobalscenario
II. PROFESSIONALCOMPETENCE	
GA18	Optimism,flexibilityanddiligencethatwouldmakethemprofessionallycompetent
GA19	Prowesstobesuccessfulentrepreunersandbecomeemployeesoftrans-nationalsocieties
GA20	ExcellenceinLocalandGlobalJobMarkets
GA21	EffectivenessinTimeManagement
GA22	EfficiencyintakingupInitiatives
GA23	Eagernesstodeliverexcellentservice
GA24	ManagerialSkillstoIdentify,CommendandtapPotentials
III. ETHICALCOMPETENCE	
GA25	Integrity and be disciplined in bringing stabilityleadingasystematiclifepromotinggoodhumanbehaviourtobuildbettersociety

GA26	Honestyinwordsanddeeds
GA27	Transparencyrevealingone‟sowncharacteraswellasself-esteemtoleadagenuineandauthenticlife
GA28	SocialandEnvironmentalStewardship
GA29	Readinesstomakeethicaldecisionsconsistentlyfromthegaloreofconflictingchoicespayingheed to theirconscience
GA30	Rightlifeskillsattherightmoment

PROGRAMMEOUTCOMES(PO)

On completion (after three years) of B.Sc. Statistics programme,thegraduateswouldbeableto

PO1	Apply acquired scientific knowledge to solve complexissues
PO2	AttainAnalyticalskillstosolvecomplexcultural,societalandenvironmentalissues
PO3	Employ latest and updated tools and technologies toanalysecomplexissues
PO4	DemonstrateProfessionalEthicsthatfosterCommunity,NationandEnvironmentBuildingInitiatives

PROGRAMMESPECIFICOUTCOMES(PSO)

Oncompletion(afterthreeyears)ofB.Sc.Statisticsprogramme,thegraduateswouldbeableto

PSO1	ApplytheknowledgeofStatistics,MathematicsandComputersciencetobecome competentprofessionals atgloballevel
PSO2	Applystatisticalknowledgetoanalyzeandsolvecomplexproblemsusingappropriatestatisticalmethodologyandinterpretresultsinavarietyof settings
PSO3	Demonstratetheabilityofcriticalobservation,logical,analyticalandproblem-solvingskills
PSO4	Writecodetoextractandreformatrealdataandtoutilizestatisticalprogrammingenvironments
PSO5	Effectivelypresent statistical findings to an audience lackingstatisticalexpertiseandworkcollaboratively
PSO6	Excelassociallycommittedstatisticsstudentshaving mutualrespect,effectivecommunicationskills,highethicalvaluesandempathyfortheneedsofsociety

PROGRAMME CODE:USST

FATIMACOLLEGE(AUTONOMOUS),MADURAI-18

DEPARTMENTOFSTATISTICS

ForthosewhojoinedinJune2019onwards

PART–I–TAMIL/FRENCH / HINDI–12CREDITS

PART–I–TAMIL

Offeredbythe ResearchCentreofTamil

.NO	SEM.	COURSE CODE	COURSETITLE	HRS	CRS	CIA Mks	ESE Mks	TOT. Mks
1.	I	19T1LC1	Language-ModernLiterature nghJj;jkpo-,f;fhy ,yf;fpak	5	3	40	60	100
2.	II	19T2LC2	Language-BakthiLiterature nghJj;jkpo-gf;jp ,yf;fpak	5	3	40	60	100
3.	III	19T3LC3	Language- Epic Literature nghJj;jkpo-fhg;gpa ,yf;fpak	5	3	40	60	100
4.	IV	19T4LC4	Language-SangamLiterature nghJj;jkpo-rq;f ,yf;fpak	5	3	40	60	100
			Total	20	12			

PART–I–FRENCH

OfferedbyTheDepartmentofFrench

S. NO	SEM.	COURSE CODE	COURSETITLE	HRS	CREDITS	CIA Mks	ESE Mks	TOT. MKs
1.	I	19RL1C1	PART1LANGUAGEFRENCH-LENIVEAUINTRODUCTIF	5	3	40	60	100

S. NO	SEM.	COURSE CODE	COURSETITLE	HRS	CREDITS	CIA Mks	ESE Mks	TOT. MKs
2.	II	19RL2C2	PART 1 LANGUAGEFRENCH-LENIVEAUDÉCOUVERTE	5	3	40	60	100
3.	III	19RL3C3	PART1LANGUAGEFRENCH-LENIVEAUINTERMEDIAIRE – LACIVILISATION,LALITTERATUREETLAGRAMMAIRE	5	3	40	60	100
4.	IV	19RL4C4	PART1LANGUAGEFRENCH-LENIVEAUDESUIVRE– LACIVILISATION,LALITTERATUREETLAGRAMMAIRE	5	3	40	60	100
			TOTAL	20	12			

PART–I–HINDI

OfferedbyTheDepartmentofHindi

S. NO	SEM.	COURSECODE	COURSETITLE	HRS	CREDITS	CIA Mks	ESE Mks	TOT. MKs
1.	I	19DL1C1	PART1LANGUAGE HINDI-बोलचालकीहहिंदी	5	3	40	60	100
2.	II	19DL2C2	PART1LANGUAGE HINDI-कार्यालयीनहहिंदी	5	3	40	60	100

S. NO	SEM.	COURSECODE	COURSETITLE	HRS	CREDITS	CIA Mks	ESE Mks	TOT. MKs
3.	III	19DL3C3	PART1LANGUAGE HINDI-ह्हद्दि ंीसाहहत्र्काआहदकालऔरभक्तिकाल	5	3	40	60	100
4.	IV	19DL4C4	PART1LANGUAGE HINDI-ह्हद्दि ंीसाहहत्र्काआधुनककाल	5	3	40	60	100
			TOTAL	20	12			

PART–II-ENGLISH–12CREDITS

OfferedbyTheResearchCentreofEnglish

S. NO	SEM.	COURSECODE	COURSETITLE	HRS	CREDITS	CIA Mks	ESE Mks	TOT. MKs
1.	I	19EL1WB	BASICCOMMUNICATIVEENGLISH	5	3	40	60	100
2.		19EL1WI	INTERMEDIATECOMMUNICATIVEENGLISH					
3.		19EL1WA	ADVANCEDCOMMUNICATIVEENGLISH					
4.	II	19EL2WB	ENGLISHCOMMUNICATIONSKILLS	5	3	40	60	100
5.		19EL2WI	ENGLISHFOREMPOWERMENT					
6.		19EL2WA	ENGLISHFOR					

S. NO	SEM.	COURSECODE	COURSETITLE	HRS	CREDITS	CIA Mks	ESE Mks	TOT. MKs
			CREATIVEWRITING					
7.	III	19EL3WN	ENGLISHFORDIGITALERA	5	3	40	60	100
8.	IV	19EL4WN	ENGLISHFORINTEGRATEDDEVELOPMENT	5	3	40	60	100
			TOTAL	**20**	**12**			

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

CORECOURSES:60CREDITS

S. NO	SEM.	COURSE CODE	COURSETITLE	HRS	CRS	CIA Mks	ESE Mks	TOT. Mks
1.	I	19ST1CC1	BASICSTATISTICS	6	4	40	60	100
2.		19ST1CC2	PROBABILITYTHEORY	6	4	40	60	100
3.	II	19ST2CC3	DESCRIPTIVESTATISTICS	6	4	40	60	100
4.		19ST2CC4	DISCRETEPROBABILITYDISTRIBUTIONS	6	4	40	60	100
5.	III	22ST3CC5	CONTINUOUSPROBABILITYDISTRIBUTIONS	6	4	40	60	100
6.		19ST3CC6	SAMPLINGTHEORY	6	4	40	60	100
7.	IV	19ST4CC7	ESTIMATIONTHEORY	6	4	40	60	100
8.		22ST4CC8	APPLIEDSTATISTICS	6	4	40	60	100
9.	V	19ST5CC9	TESTING OF HYPOTHESIS	5	4	40	60	100
10.		19ST5CC10	DESIGNOF	5	4	40	60	100

S. NO	SEM.	COURSE CODE	COURSETITLE	HRS	CRS	CIA Mks	ESE Mks	TOT. Mks
			EXPERIMENTS					
11.		19ST5CC11	DEMOGRAPHY	5	4	40	60	100
12.		19ST5CC12	REALANALYSIS	5	4	40	60	100
13.	VI	19ST6CC13	STATISTICALQUALITYCONTROL	5	4	40	60	100
14.		19ST6CC14	STOCHASTICPROCESSES	5	4	40	60	100
15.		19ST6CC15	ACTUARIAL STATISTICS	5	4	40	60	100

ELECTIVES-15CREDITS

S.No	SEM.	COURSECODE	COURSETITLE	HRS	CRS	CIA Mks	ESE Mks	TOT. Mks
1	V	19ST5ME1&19ST5ME2/ 22ST5ME3&22ST5ME4	COMPUTERPROGRAMMINGINC&C-PRACTICALS/ OBJECT ORIENTED PROGRAMMING WITH C++ &C++ PRACTICALS	5	5	40	60	100
2	VI	19ST6ME5/ 19ST6ME6/ 19ST6ME7/ 19ST6ME8/ 19ST6ME9/ 19ST6ME10	NUMERICALMETHODS/MULTIVARIATE ANALYSIS/ REGRESSIONANALYSIS/ OPERATIONSRESEARCH/ INDUSTRIALSTATISTICS/ECONOMETRICS	5	5	40	60	100

			TOTAL	15	15			

ALLIED-20CREDITS

S.NO	SEM.	COURSECODE	COURSETITLE	HRS	CRS	CIA Mks	ESE Mks	TOT. Mks
1.	I	22G1ACST1	CALCULUS	5	5	40	60	100
2.	II	19G2ACST2	ALGEBRA	5	5	40	60	100
3.	III	19G3ACST3	LINEARPROGRAMMING	5	5	40	60	100
4.	IV	19G4ACST4	LINEARALGEBRA	5	5	40	60	100

PART–IV–20CREDITS

- **VALUEEDUCATION**
- **ENVIRONMENTAL AWARENESS**
- **NONMAJORELECTIVE**
- **SKILLBASEDCOURSES**

S.No	SEM.	COURSE CODE	COURSETITLE	HRS	CRS	CIA Mks	ESE Mks	TOT. Mks
1.	I	21G1VE1	PERSONALVALUES-VALUEEDUCATION(INCLUDINGMEDITATIONINACTIONMOVEMENT)	1	1	40	60	100
2.		21ST1NME	FUNDAMENTALSOFSTATISTICS	2	2	40	60	100
3.	II	21G2VE2	VALUES FORLIFE	1	1	40	60	100
4.		21ST2NME	FUNDAMENTALSOFSTATISTICS	2	2	40	60	100
5.		21G3EE1	ENVIRONMENTALEDUCATION	1	1	40	60	100

6.	III	19ST3SB1	PRACTICALSTATISTICS-I	2	2	40	60	100
7.	IV	19G4EE2	GENDERSTUDIES	1	1	40	60	100
8.		22ST4SB2	SAMPLING DISTRIBUTIONS	2	2	40	60	100
9.	V	19ST5SB3	PRACTICALSTATISTICS–III	2	2	40	60	100
10.		19ST5SB4	STATISTICALSOFTWARE:SPSS	2	2	40	60	100
11.	VI	159ST6SB5	PRACTICALSTATISTICS–IV	2	2	40	60	100
12.		19ST6SB6	STATISTICALSOFTWARE:R	2	2	40	60	100

PART–V–1CREDIT

OFF-CLASSPROGRAMMES

SHIFT-II

S. No	SEM	COURSE CODE	COURSETITLE	HRS	CREDIT	TOT. Mks
1.	I-IV	21S4PED	PhysicalEducation	30/ SEM	1	100
2.		21S4YRC	YouthRedCross			
3.		21S4NSS	NSS			
4.		21S4RTC	Rotaract			
5.		21S4WEC	WomenEmpowermentCell			
6.		21S4ACUF	AICUF			

OFF-CLASSPROGRAMME

ADD-ONCOURSES

COURSE CODE	Courses	HRS	CRS	Semester inwhicht hecourse isoffered	CIA Mks	ESE Mks	TOT. Mks
19UAD2CA	**COMPUTERAPPLICATIONS**	40	2	I&II	40	60	100
19UADFCA	**ONLINESELFLEARNINGCOURSE-** FoundationCoursefor Arts	40	3	I	50	-	50
19UADFCS	**ONLINESELFLEARNINGCOURSE-** FoundationCourseforScience	40	3	II	50	-	50
21UAD3ES	ProfessionalEthics	15	1	III	40	60	100
21UAD4ES	PersonalityDevelopment	15	1	IV	40	60	100
21UAD5ES	FamilyLifeEducation	15	1	V	40	60	100
21UAD6ES	LifeSkills	15	1	VI	40	60	100
19UAD5HR	HumanRights	15	2	V	40	60	100
	OUTREACHPROGRAMME- ReachOut to SocietythroughAction **ROSA**	100	3	V&VI	-	-	100
	PROJECT	30	4	VI	40	60	100
	READINGCULTURE	10/Semester	1	II-VI	-	-	-
	MOOC COURSES(Department SpecificCourses/anyothercourses)*	-	Minimum 2 Credit	-	-	-	

COURSE CODE	Courses	HRS	CRS	Semester inwhicht hecourse isoffered	CIA Mks	ESE Mks	TOT. Mks
	Studentscanoptotherth anthelistedcoursefrom UGC-SWAYAMUGC/CEC		s				
	TOTAL		22+				

EXTRACREDITCOURSE

CourseCode	Courses	Hrs.	Credits	Semester inwhicht hecourse isoffered	CIA Mks	ESE Mks	Total Marks
22ST2SL1	Quantitative Aptitude and Data Interpretations			**II**	**40**	**60**	**100**
19UGSLST1	Official Statistics				**40**	**60**	**100**

19UGSLST2	Bio Statistics				**40**	**60**	**100**
22ST4SL2	Differential Equations			**IV**	**40**	**60**	**100**

IB.Sc.STATISTICS

SEMESTER I

Forthosewhojoinedin2019onwards

Skill Development-100%

PROGRAMME CODE	COURSE CODE	COURSET ITLE	CATEGORY	HRS/WEEK	CREDITS
USST	19ST1CC1	Basic Statistics	Lecture	6	4

COURSEDESCRIPTION

Thiscourseintroducesthehistoricaldevelopmentofstatistics,presentation of data, descriptive measures and fitting mathematical curvestothedata.

COURSEOBJECTIVES

To enable the students to analyze the given data and make them solvesimplereallifeproblemsrelatedtodescriptivemeasuresinstatistics.

UNIT–ICOLLECTIONOFDATA (18HRS.)

Introduction – Primary and Secondary data – Methods of CollectingPrimary data – Drafting the Questionnaire – Pretesting the Questionnaire –Specimen Questionnaire – Sources of Secondary data – Editing Primary andSecondarydata–PrecautionsintheuseofSecondarydata.

UNIT–II CLASSIFICATIONANDTABULATIONOFDATA (18HRS.)

Introduction–MeaningandObjectivesofClassification–TypesofClassification–Formationof a Discrete Frequency Distribution - FormationofaContinuousFrequencyDistribution–Tabulation of data – Parts of aTable–GeneralrulesofTabulation–TypesofTables.

UNIT–IIIDIAGRAMATICANDGRAPHICPRESENTATION (18HRS.)

Introduction–SignificanceofDiagramsandGraphs–GeneralrulesforConstructingDiagrams–TypesofDiagrams–Graphs–GraphsofFrequencyDistributions.

UNIT–IVMEASURESOFCENTRALTENDENCY (18HRS.)

Introduction–ObjectivesofAveraging–RequisitesofaGoodAverage **–TypesofAverages–ArithmeticMean–Median–Mode–GeometricMean–HarmonicMean**–SelfStudy**.**

UNIT–VMEASURESOFDISPERSION (18HRS.)

Introduction–SignificanceofMeasuringVariation– Properties of aGoodMeasureofVariation-MethodsofStudyingVariation– WhichMeasureofDispersiontouse.

TEXT:

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

Chapters:3,5,6,7,8.

REFERENCES:

1. S.C.GuptaandV.K.Kapoor,*FundamentalsofMathematicalstatistics*,Sultan Chand&Sons,Revisededition(2014).
2. Arumugam and Thangapandi Isaac, *Statistics*, New Gammapublishinghouse,(2012).

COURSECONTENTS&LECTURESCHEDULE:

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
UNIT-1COLLECTIONOFDATA				
1.1	Primaryand Secondarydata	2	Lecture	PPT& White board
1.2	MethodsofCollectingPrimarydata	2	Lecture	PPT& White board
1.3	DraftingtheQuestionnaire	4	Lecture	PPT& White board
1.4	PretestingtheQuestionnaire	2	Lecture	PPT& White board
1.5	SourcesofSecondarydata	2	Lecture	PPT& White board
1.6	SpecimenQuestionnaire	2	Chalk &Talk	BlackBoard
1.7	EditingPrimaryandSecondarydata	2	Chalk &Talk	BlackBoard
1.8	PrecautionsintheuseofSecondarydata.	2	Chalk &Talk	BlackBoard
UNIT-2CLASSIFICATIONANDTABULATIONOFDATA				
2.1	MeaningandObjectivesofClassification	3	Lecture	PPT& White board
2.2	Types of Classification	2	Chalk &Talk	BlackBoard

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
2.3	FormationofaDiscreteFrequencyDistribution	4	Chalk &Talk	BlackBoard
2.4	FormationofaContinuousFrequencyDistribution	3	Chalk &Talk	BlackBoard
2.5	Tabulationof data	3	Chalk &Talk	BlackBoard
2.6	GeneralrulesofTabulation–TypesofTables	3	Lecture	PPT& White board
UNIT-3DIAGRAMATICANDGRAPHICPRESENTATION				
3.1	SignificanceofDiagramsandGraphs	4	Lecture	PPT& White board
3.2	GeneralrulesforConstructingDiagrams	4	Lecture	PPT& White board
3.3	TypesofDiagrams	4	Chalk &Talk	BlackBoard
3.4	Graphs–GraphsofFrequencyDistributions	6	Chalk &Talk	BlackBoard
UNIT-4MEASURESOFCENTRALVALUE				
4.1	ObjectivesofAveraging	1	Lecture	PPT& White board
4.2	RequisitesofaGoodAverage	1	Lecture	PPT& White board
4.3	TypesofAverages	1	Chalk &Talk	BlackBoard
4.4	ArithmeticMean	3	Discussion	BlackBoard

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
4.5	Median	3	Discussion	BlackBoard
4.6	Mode	3	Discussion	BlackBoard
4.7	Geometric Mean	3	Chalk &Talk	BlackBoard
4.8	HarmonicMean	3	Chalk &Talk	BlackBoard
UNIT-5MEASURESOFDISPERSION				
5.1	Significance of MeasuringVariation	3	Lecture	PPT& White board
5.2	PropertiesofaGoodMeasureofVariation	2	Lecture	PPT& White board
5.3	MethodsofStudyingVariation	6	Chalk &Talk	BlackBoard
5.4	WhichMeasureofDispersiontouse.	7	Chalk &Talk	BlackBoard

Levels	C1	C2	C3	C4	C5	TotalScholasticMarks	NonScholasticMarks C6	CIA Total	% ofAssessment
	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%
NonScholastic	-	-	-	-	-		5	5	12.5%
Total	10	10	5	5	5	35	5	40	100%

CIA	
Scholastic	35
NonScholastic	5
	40

- ✓ **ThelevelsofCIAAssessmentbasedonRevisedBloom'sTaxonomyare:**

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

EVALUATIONPATTERN

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

COURSEOUTCOMES

Onthesuccessfulcompletionofthecourse,studentswillbeableto:

NO.	COURSEOUTCOMES	KNOWLEDGE LEVEL(ACCORDINGTOREVISEDBLOOM'STAXONOMY)	PSOsADDRESSED
CO1	Recognizes investigation,investigator, enumerator andenumerationandexplaindifferentmethodsofdatacollection.	K1	PSO1
CO2	IdentifiestheneedofClassificationandTabulation	K1&K2	PSO2
CO3	Construct and analyze graphicaldisplaytosummarizedata.	K3&K4	PSO3
CO4	Explain and evaluates variousmeasureofcentraltendency	K2&K3	PSO5 &PSO6
CO5	Computeandinterpretmeasureofcentreandspreadofdata.	K2&K4	PSO5

MappingofC0swithPSOs

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

MappingofC0swithPOs

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: ♦StronglyCorrelated–**3** ♦ModeratelyCorrelated–**2**

♦ WeaklyCorrelated-**1**

COURSEDESIGNER:

1. **Mrs.K.Bhuvaneswari**
2. **Ms.K.Saranya**

ForwardedBy

Dr.E.Helena

IB.Sc..STATISTICSS

EMESTER I

Forthosewhojoinedin2019onwards

Skill Development-100%

PROGRAMME CODE	COURSE CODE	COURSET ITLE	CATEGORY	HRS/WEEK	CREDITS
USST	19ST1CC2	Probability Theory	Lecture	6	4

COURSEDESCRIPTION

Thiscourseintroducestheconceptsoffunctionsanditsproperties,theoremsrelatedtorandomvariables.

COURSEOBJECTIVES

To enable the students understand the concepts of random variableanddistributionfunctions,expectation,conditionalexpectationandvariance,generatingfunctions,lawoflargenumbers.

UNIT–I THEORYOFPROBABILITYI (18HRS.)

Introduction–BasicTerminology–**MathematicalProbability–StatisticalProbability–SubjectiveProbability–** **(**Self Study) – MathematicalTools–AxiomaticApproachtoProbability.

UNIT–II THEORYOFPROBABILITYII (18HRS.)

Extended Axiom of Addition– (Self Study) and Axiom of Continuity – BayesTheorem–GeometricProbability.

UNIT –III RANDOM VARIABLES AND DISTRIBUTION FUNCTIONS(18HRS.)

Introduction– Distribution Function – Discrete Random Variable–ContinuousRandomVariable–TwoDimensionalRandomVariables.

UNIT–IV MATHEMATICALEXPECTATION (18HRS.)

Introduction–MathematicalExpectation–ExpectedValueofFunctionofaRandomVariable–PropertiesofExpectation–Propertiesof

Variance–Covariance–SomeInequalitiesInvolvingExpectation–MomentsofBivariateProbabilityDistributions– Conditional Expectation andConditionalVariance.

UNIT–

VGENERATINGFUNCTIONSANDLAWOFLARGENUMBERS(18HRS.)

MomentGeneratingFunction–Cumulants–CharacteristicsFunction –InversionTheorem–UniquenessTheoremofCharacteristicsFunction–Necessary and Sufficient Condition for Independence of Random VariablesinTermsofCharacteristicsFunctions–HallyBrayTheorem–ContinuityTheoremforCharacteristicsFunctions– Chebychve‟s Inequality – ConvergenceinProbability.

TEXT:

S.C.Gupta and V.K.Kapoor, *Fundamentals of Mathematical Statistics*, SultanChand&Sons,Revisededition(2014).

REFERENCES:

1. Arumugam and Thangapandi Isaac, *Statistics*, New Gammapublishinghouse(2012).

COURSECONTENTS&LECTURESCHEDULE:

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
UNIT-1THEORYOFPROBABILITYI				
1.1	BasicTerminology	4	Lecture	PPT& White board
1.2	MathematicalProbability	4	Chalk &Talk	BlackBoard
1.3	StatisticalProbability	4	Discussion	BlackBoard
1.4	SubjectiveProbability	3	Discussion	BlackBoard
1.5	AxiomaticApproachtoProbability.	3	Chalk &Talk	BlackBoard
UNIT-2THEORYOFPROBABILITYII				
2.1	ExtendedAxiomofAdditionand	6	Discussion	BlackBoard
2.2	AxiomofContinuity	6	Chalk &Talk	BlackBoard
2.3	BayesTheorem	3	Chalk &Talk	BlackBoard
2.4	GeometricProbability.	3	Chalk &Talk	BlackBoard
UNIT-3RANDOMVARIABLESANDDISTRIBUTIONFUNCTIONS				
3.1	DistributionFunction	4	Chalk &Talk	BlackBoard
3.2	DiscreteRandomVariable	5	Chalk &Talk	BlackBoard
3.3	ContinuousRandomVariable	5	Chalk&	Black

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
			Talk	Board
3.4	TwoDimensionalRandomVariables	4	Chalk &Talk	BlackBoard
UNIT-4MATHEMATICALEXPECTATION				
4.1	ExpectedValueofFunctionofaRandomVariable	3	Chalk &Talk	BlackBoard
4.2	PropertiesofExpectation	3	Chalk &Talk	BlackBoard
4.3	PropertiesofVariance	3	Chalk &Talk	BlackBoard
4.4	Covariance	3	Chalk &Talk	BlackBoard
4.5	MomentsofBivariateProbabilityDistributions	2	Chalk &Talk	BlackBoard
4.6	ConditionalExpectation	2	Chalk &Talk	BlackBoard
4.7	ConditionalVariance	2	Chalk &Talk	BlackBoard
UNIT-5GENERATINGFUNCTIONSANDLAWOFLARGENUMBERS				
5.1	MomentGeneratingFunction	3	Chalk &Talk	BlackBoard
5.2	CharacteristicsFunction	3	Chalk &Talk	BlackBoard
5.3	InversionTheorem	1	Chalk &Talk	BlackBoard
5.4	NecessaryandSufficientConditionforIndependenceofRandomVariablesinTermsofCharacteristicsFunctions	3	Chalk &Talk	BlackBoard
5.5	ContinuityTheoremfor	3	Chalk&	Black

Module No.	Topic	No.ofLectures	Teaching Pedagogy	TeachingAids
	CharacteristicsFunctions		Talk	Board
5.6	Chebychve‟sInequality	2	Chalk &Talk	BlackBoard
5.7	HallyBrayTheorem	1	Chalk &Talk	BlackBoard
5.8	ConvergenceinProbability	2	Chalk &Talk	BlackBoard

Levels	C1	C2	C3	C4	C5	TotalScholasticMarks	NonScholasticMarks C6	CIA Total	% ofAssessment
	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%
NonScholastic	-	-	-	-	-		5	5	12.5%
Total	10	10	5	5	5	35	5	40	100%

CIA	
Scholastic	35
NonScholastic	5
	40

- ✓ **ThelevelsofCIAAssessmentbasedonRevisedBloom'sTaxonomyare:**

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

EVALUATIONPATTERN

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

COURSEOUTCOMES

Onthesuccessfulcompletionofthecourse,studentswillbeableto:

NO.	COURSEOUTCOMES	KNOWLEDGE LEVEL(ACCORDINGTOREVISEDBLOOM'STAXONOMY)	PSOsADDRESSED
CO1	Identifyfromaprobabilityscenarioeventsthataresimple,complementary, mutually exclusive,andindependent.	K3	PSO4
CO2	Recognizemultiplicationrulefortwoindependentevents,theadditionrulefororunionoftwoevents,andthecomplementrule.	K1&K2	PSO1
CO3	Describethemainpropertiesofprobabilitydistributionandrandomvariables.	K1&K3	PSO5
CO4	Applygeneralpropertiesoftheexpectation and varianceoperators	K3	PSO4
CO5	Identifyandexaminegeneratingfunctionsandlaw of largenumbers	K3&K4	PSO3

MappingofC0swithPSOs

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

MappingofC0swithPOs

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

Note: ♦StronglyCorrelated–**3** ♦ModeratelyCorrelated–**2**

♦ WeaklyCorrelated-**1**

COURSEDESIGNER:

1. **Mrs.K.Bhuvaneswari**
2. **Ms.K.SaranyaF**

orwardedBy

Dr.E.Helena

I B.Sc STATISTICS

SEMESTER –I

For those who joined in 2022 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USST	22G1ACST1	Calculus	Lecture	5	5

COURSE DESCRIPTION

This course covers differentiation and integration of functions of one variable.

COURSE OBJECTIVES

To enable the students to understand higher derivatives, curvature, singular points, envelopes, asymptotes, reduction formula, multiple integrals in calculus.

UNIT –I DIFFERENTIATION (15 HRS.)

Differentiability –Algebra of Derivatives – Derivatives of Standard Functions –The Chain Rule – Differentiation of Inverse Functions – Differentiation by Transformation – Logarithmic Parametric Differentiation – Differentiation of Functions with respect to Functions- Differentiation of Implicit Function

UNIT – II HIGHER DERIVATIVES AND CURVATURE (15 HRS.)

Higher Derivatives - n^{th} Derivative of some standard functions- Leibnitz theorem- p-r equations – Curvature , centre and radius of curvature

UNIT –IIIEVALUATION OF INTEGRALS (15 HRS.)

Some simple integrals – Method of Substitution – Integration of : Rational , Irrational and Trigonometric Functions – Evaluation of Definite Integrals – Integration by Parts

UNIT –IV REDUCTION FORMULA (15 HRS.)

Reduction formula for $\sin^n x$, $\cos^n x$,$\tan^n x$, $\cot^n x$, $\operatorname{cosec}^n x$, $\sec^n x$, and $\sin^m x \cos^n x$.

UNIT –V MULTIPLE INTEGRALS (15 HRS.)

Jacobian - (Self Study) – Double and Triple integrals

TEXT:

S. Arumugam and A. ThangapandiIssac - *Calculus* (Differential and Integral Calculus) **-** New Gamma Publishing House (2012).

REFERENCES:

1. Narayanan and Manickavasagam Pillai, *Calculus*, S.Viswanathan (Printers & Publishers) Pvt Ltd (2008).
2. Anit. M.Agarwal, *Differential Calculus*, MeerutArihantPrakashan (2008).
3. Shanthi Narayanan- *Differential Calculus*, Shyam Lal Chairtable Trust (1994).
4. Shanthi Narayanan, *Integral Calculus*, S.Chand and Company Ltd (1994).

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aid
UNIT -1 DIFFERENTIATION				
1.1	Differentiability –Algebra of Derivatives	2	Chalk & Talk	Black Board
1.2	Derivatives of Standard Functions – The Chain Rule	3	Chalk & Talk	Black Board
1.3	Differentiation of Inverse Functions	3	Chalk & Talk	Black Board
1.4	Differentiation by Transformation	3	Chalk & Talk	Black Board
1.5	Logarithmic Parametric Differentiation	2	Chalk & Talk	Black Board
1.6	Differentiation of Functions with respect to Functions	2	Chalk & Talk	Black Board
1.7	Differentiation of Implicit Function	3	Chalk & Talk	Black Board
UNIT -2 HIGHER DERIVATIVES AND CURVATURE				
2.1	Higher Derivatives	5	Chalk & Talk	Black Board
2.2	n^{th} Derivative of some standard functions	3	Chalk & Talk	Black Board
2.3	Leibnitz theorem- p-r equations	5	Chalk & Talk	Black Board
2.4	Curvature , centre and radius of curvature	5	Chalk & Talk	Black Board
UNIT 3 EVALUATION OF INTEGRALS				
3.1	Some simple integrals	4	Chalk & Talk	Black Board

3.2	Method of Substitution Integration of Rational functions	3	Chalk & Talk	Black Board
3.3	Irrational and Trigonometric Functions	3	Chalk & Talk	Black Board
3.4	Evaluation of Definite Integrals	4	Chalk & Talk	Black Board
3.5	Integration by Parts	4	Chalk & Talk	Black Board
UNIT 4 REDUCTION FORMULA				
4.1	Reduction formula for $\sin^n x$,.	4	Chalk & Talk	Black Board
4.2	Reduction formula for $\cos^n x$,	3	Chalk & Talk	Black Board
4.3	Reduction formula for $\tan^n x$,	4	Chalk & Talk	Black Board
4.4	Reduction formula for $\cot^n x$, $\text{cosec}^n x$,	4	Chalk & Talk	Black Board
4.5	Reduction formula for $\sec^n x$ and $\sin^m x \cos^n x$	3	Chalk & Talk	Black Board
UNIT 5 MULTIPLE INTEGRALS				
5.1	Double integrals	9	Lecture	PPT & White board
5.2	Triple integrals	9	Lecture	PPT & White board

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total
	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
K2	2	2	5	-	-	9	-	9
K3	3	3	-	-	5	11	-	11

K4	**3**	**3**	**-**	**5**	**-**	**11**	**-**	**11**	
Non Scholastic	**-**	**-**	**-**	**-**	**-**		**5**	**5**	
Total	**10**	**10**	**5**	**5**	**5**	**35**	**5**	**40**	

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

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

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

EVALUATION PATTERN

	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	Able to differentiate the given functions	K1, K2 & K3	PSO1& PSO2
CO 2	Explain higher derivatives and apply Leibnitz theorem to find the nth derivative of functions.	K2	PSO3
CO 3	Able to evaluate the definite integrals	K1 & K3	PSO3

CO 4	Construct reduction formula for trigonometric functions	K1, K2 & K3	PSO1 & PSO3
CO 5	Define Jacobian, double & triple integrals and apply the knowledge of change of variables to solve the problems in double and triple integrals.	K3 & K4	PSO3

Mapping of C0s 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 C0s 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**

COURSE DESIGNER:

1. **Mrs. J. Annaal Mercy**
2. **Mrs. P. Dhanapriya**

Forwarded By

Dr. E. Helena

IB.Sc.STATISTICS

SEMESTERII

Forthosewhojoinedin2019onwards

Skill Development-100%

PROGRAMME CODE	COURSE CODE	COURSETITLE	CATEGORY	HRS/WEEK	CREDITS
USST	19ST2CC3	Descriptive Statistics	Lecture	6	4

COURSEDESCRIPTION

Thiscourseintroducesmeasurementofrelationshipintermsofquantitative andqualitativedata.

COURSEOBJECTIVES

Thiscourseimpartstheknowledgeofcorrelation,regressionandassociationofa ttributestostudents.

UNIT–I SKEWNESS,MOMENTSANDKURTOSIS (18HRS.)

Introduction–TestsofSkewness–MeasuresofSkewness–Moments –Kurtosis.

UNIT–II CORRELATIONANALYSISI (18HRS.)

Introduction–SignificanceoftheStudyof Correlation – CorrelationandCausation–TypesofCorrelation–MethodsofstudyingCorrelation– GraphicMethod–**KarlPearson'sCoefficientofCorrelation– CoefficientofCorrelation–(**SelfStudy)andProbableError**.**

UNIT–III CORRELATIONANALYSISII (18HRS.)

Coefficient of Determination – Properties of the Coefficient ofCorrelation–RankCorrelationCoefficient.

UNIT–IV REGRESSIONANALYSIS (18HRS.)

Introduction – Uses of Regression Analysis – Correlation andRegressionAnalysis:AComparison–RegressionLines– RegressionLines–

RegressionEquations–RegressionEquationsincaseofCorrelationTable–StandardErrorofEstimate.

UNIT–V ASSOCIATIONOFATTRIBUTES (18HRS.)

Introduction–DifferencebetweenCorrelation and Association – NotationandTerminology–ConsistencyofData–AssociationandDisassociation–MethodsofStudyingAssociation–AssociationofThreeAttributes.

TEXT:

S.P.Gupta,*StatisticalMethods*,SultanChand&Sons,Revisededition(2014).

Chapters:9,10,11,12.

REFERENCES:

1. S.C.Guptaand V.K.Kapoor, *Fundamentals of Mathematical statistics,* SultanChand&Sons,Revisededition(2014).
2. Arumugam and Thangapandi Isaac, *Statistics*, New Gammapublishinghouse,(2012).

COURSECONTENTS&LECTURESCHEDULE:

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
UNIT-1SKEWNESS,MOMENTSANDKURTOSIS				
1.1	TestsofSkewness	3	Chalk &Talk	BlackBoard
1.2	MeasuresofSkewness	3	Chalk &Talk	BlackBoard
1.3	Moments	6	Chalk &Talk	BlackBoard
1.4	Kurtosis.	6	Chalk &Talk	BlackBoard
UNIT-2CORRELATIONANALYSISI				
2.1	SignificanceoftheStudyofCorrelation	3	Chalk &Talk	BlackBoard
2.2	CorrelationandCausation,TypesofCorrelation	4	Chalk &Talk	BlackBoard
2.3	MethodsofstudyingCorrelation	3	Chalk &Talk	BlackBoard
2.4	KarlPearson‟sCoefficientofCorrelation	4	Discussion	BlackBoard
2.5	CoefficientofCorrelationandProbableError.	4	Discussion	BlackBoard
UNIT-3CORRELATIONANALYSISII				
3.1	CoefficientofDetermination	5	Chalk &Talk	BlackBoard
3.2	PropertiesoftheCoefficientofCorrelation	5	Chalk &Talk	BlackBoard
3.3	Rank CorrelationCoefficient	8	Chalk &Talk	BlackBoard

Module No.	Topic	No.ofLectures	TeachingPedagogy	TeachingAids
UNIT-4REGRESSIONANALYSIS				
4.1	UsesofRegressionAnalysis	5	Chalk &Talk	BlackBoard
4.2	CorrelationandRegression Analysis:AComparison–RegressionLines	5	Chalk &Talk	BlackBoard
4.3	EquationsincaseofCorrelationTable	4	Chalk &Talk	BlackBoard
4.4	StandardErrorofEstimate	4	Chalk &Talk	BlackBoard
UNIT-5ASSOCIATIONOFATTRIBUTES				
5.1	DifferencebetweenCorrelationandAssociation	5	Chalk &Talk	BlackBoard
5.2	ConsistencyofData–AssociationandDisassociation	5	Chalk &Talk	BlackBoard
5.3	MethodsofStudyingAssociation	4	Chalk &Talk	BlackBoard
5.4	AssociationofThreeAttributes.	4	Chalk &Talk	BlackBoard

Levels	C1	C2	C3	C4	C5	TotalScholasticMarks	NonScholasticMarks C6	CIA Total	% ofAssessment
	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%
NonScholastic	-	-	-	-	-		5	5	12.5%
Total	10	10	5	5	5	35	5	40	100%

CIA	
Scholastic	35
NonScholastic	5
	40

- ✓ **ThelevelsofCIAAssessmentbasedonRevisedBloom'sTaxonomyare:**

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

EVALUATIONPATTERN

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

COURSEOUTCOMES

Onthesuccessfulcompletionofthecourse,studentswillbeableto:

NO.	COURSEOUTCOMES	KNOWLEDGE LEVEL(ACCORDINGTOREVISEDBLOOM'STAXONOMY)	PSOsADDRESSED
CO1	Evaluatesandinterpretsthe natureofskewnessandkurtosis	K2&K4	PSO2
CO2	Identifythedirectionandstrengthofacorrelationbetweentwofactors.	K3	PSO1
CO3	Computeandinterpretthespearmancorrelationcoefficient.	K2&K4	PSO3
CO4	Recognize regression analysis applications for purpose ofdescriptionandprediction	K1,K2&K3	PSO4
CO5	Explainthemethodsof associationofattributes	K2&K4	PSO6

MappingofC0swithPSOs

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

MappingofC0swithPOs

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

Note: ♦StronglyCorrelated–**3** ♦ModeratelyCorrelated–**2**

♦ WeaklyCorrelated-**1**

COURSEDESIGNER:

1. **Dr.P.Vetriselvi**
2. **Mrs.K.Bhuvaneswari**

ForwardedBy

Dr.E.Helena

IB.Sc.STATISTICS

SEMESTER II

Forthosewhojoinedin2019onwards

Skill Development-100%

PROGRAMME CODE	COURSE CODE	COURSETITLE	CATEGORY	HRS/WEEK	CREDITS
USST	19ST2CC4	DiscreteProbabilityDistribution	Lecture	6	4

COURSEDESCRIPTION

Thiscourseintroducesprobabilityfunctionsforrandomvariablesthataredefinedfordifferentprobabilisticsituations.

COURSEOBJECTIVES

Thiscourseexposesstudentsthevariousimportantdiscreteprobability models and real life situations where these distributions provideappropriatemodels.

UNIT–I BERNOULLIANDBINOMIALDISTRIBUTIONS (18HRS.)

MomentsofBernoulliDistribution–MomentsofBinomialDistribution –RecurrenceRelationfortheMomentsofBinomialDistribution–FactorialMoments of Binomial Distribution - Mean Deviation about Mean of BinomialDistribution– ModeofBinomialDistribution– MomentGeneratingFunctionofBinomialDistribution- AdditivePropertyofBinomialDistribution– CharacteristicFunctionofBinomialDistributionCumulantsoftheBinomialDistribution-**RecurrenceRelationforCumulants of BinomialDistribution–(**SelfStudy)- ProbabilityGeneratingFunctionofBinomialDistribution- RecurrenceRelationfortheProbabilities of BinomialDistribution.

UNIT–II POISSONDISTRIBUTION (18HRS.)

MomentsofPoissonDistribution–ModeofPoissonDistribution- RecurrenceRelationfortheMomentsofPoissonDistribution– MomentGeneratingFunctionofPoissonDistribution-CharacteristicFunctionof

Poisson Distribution - **Cumulants of Poisson Distribution – (**Self Study)- AdditivePropertyofIndependentPoissonVariates- ProbabilityGeneratingFunctionofPoisson Distribution - Recurrence Relation for the ProbabilitiesofPoissonDistribution.

UNIT–III NEGATIVEBINOMIALDISTRIBUTION (18HRS.)

MomentGeneratingFunctionofNegativeBinomialDistribution- CumulantsofNegativeBinomialDistribution– PoissondistributionasaLimitingcaseofNegativeBinomialDistribution- ProbabilityGeneratingFunctionofNegativeBinomialDistribution– DeductionofMomentsofNegativeBinomialDistributionfromthoseofBinomialDistribution.

UNIT–IVGEOMETRICANDHYPERGEOMETRICDISTRIBUTIONS (18HRS.)

MomentsofGeometricDistribution– MomentGeneratingFunctionofGeometricDistribution– MeanandVarianceoftheHyper geometricDistribution– FactorialMomentsoftheHypergeometricDistribution–Approximation to Binomial Distribution – Recurrence Relation for the HypergeometricDistribution.

UNIT–VMULTINOMIALANDPOWERSERIESDISTRIBUTIONS(18HRS.)

MomentsofMultinomialDistribution–(SelfStudy)– MomentGeneratingFunctionofPowerSeriesDistribution– RecurrenceRelationforCumulantsofPowerSeriesDistribution.

TEXT:

S.C.GuptaandV.K.Kapoor,*FundamentalsofMathematicalstatistics*,SultanChand&Sons, Revisededition(2014).

REFERENCES:

1. ArumugamandThangapandiIsaac,*Statistics*,NewGammapublishinghouse,(2012).
2. S.P.Gupta,*StatisticalMethods*,SultanChand&Sons,Revisededition(2014).

COURSECONTENTS&LECTURESCHEDULE:

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
UNIT-1BERNOULLIANDBINOMIALDISTRIBUTIONS				
1.1	MomentsofBernoulli Distribution	2	Chalk &Talk	BlackBoard
1.2	MomentsofBinomial Distribution	2	Chalk &Talk	BlackBoard
1.3	RelationfortheMomentsofBinomialDistribution– FactorialMomentsofBinomialDistribution	5	Chalk &Talk	BlackBoard
1.4	Moment Generating Function ofBinomialDistribution-AdditivePropertyofBinomialDistribution	5	Chalk &Talk	BlackBoard
1.5	Recurrence Relation forCumulants of BinomialDistribution	2	Discussion	BlackBoard
1.6	ProbabilityGeneratingFunctionofBinomialDistribution	2	Chalk &Talk	BlackBoard
UNIT-2 POISSONDISTRIBUTION				
2.1	MomentsofPoissonDistribution	3	Chalk &Talk	BlackBoard
2.2	ModeofPoissonDistribution	3	Chalk &Talk	BlackBoard
2.3	CharacteristicFunctionofPoissonDistribution	2	Chalk &Talk	BlackBoard
2.4	CumulantsofPoissonDistribution	2	Discussion	BlackBoard
2.5	AdditivePropertyofIndependentPoissonVariates	2	Chalk &Talk	BlackBoard

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
2.6	Moment Generating Function ofPoissonDistribution	2	Chalk &Talk	BlackBoard
2.7	ProbabilityGeneratingFunctionofPoissonDistribution	2	Chalk &Talk	BlackBoard
2.8	RecurrenceRelationfortheProbabilitiesofPoissonDistribution.	2	Chalk &Talk	BlackBoard
UNIT-3NEGATIVEBINOMIALDISTRIBUTION				
3.1	Moment Generating Function ofNegativeBinomialDistribution	3	Chalk &Talk	BlackBoard
3.2	CumulantsofNegativeBinomialDistribution	3	Chalk &Talk	BlackBoard
3.3	Poisson distribution as aLimiting case of NegativeBinomialDistribution	3	Chalk &Talk	BlackBoard
3.4	ProbabilityGeneratingFunctionofNegativeBinomialDistribution	4	Chalk &Talk	BlackBoard
3.5	DeductionofMomentsofNegativeBinomialDistributionfromthoseofBinomialDistribution	5	Chalk &Talk	BlackBoard
UNIT-4GEOMETRICANDHYPERGEOMETRICDISTRIBUTIONS				
4.1	MomentsofGeometricDistribution	5	Chalk &Talk	BlackBoard
4.2	Moment Generating Function ofGeometricDistribution	5	Chalk &Talk	BlackBoard
4.3	FactorialMomentsoftheHypergeometricDistribution	4	Chalk &Talk	BlackBoard
4.4	RecurrenceRelationfortheHypergeometricDistribution.	4	Chalk &Talk	BlackBoard

Module No.	Topic	No.ofLectures	TeachingPedagogy	TeachingAids
UNIT-5MULTINOMIALANDPOWERSERIESDISTRIBUTIONS				
5.1	MomentsofMultinomial Distribution	6	Chalk &Talk	BlackBoard
5.2	Moment Generating Function ofPowerSeriesDistribution	6	Chalk &Talk	BlackBoard
5.3	Recurrence Relation forCumulantsof PowerSeriesDistribution.	6	Chalk &Talk	BlackBoard

Levels	C1	C2	C3	C4	C5	TotalScholasticMarks	NonScholasticMarks C6	CIA Total	% ofAssessment
	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%
NonScholastic	-	-	-	-	-		5	5	12.5%
Total	10	10	5	5	5	35	5	40	100%

CIA	
Scholastic	**35**
NonScholastic	**5**
	40

- ✓ **ThelevelsofCIAAssessmentbasedonRevisedBloom'sTaxonomyare:**

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

EVALUATIONPATTERN

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

NO.	COURSEOUTCOMES	KNOWLEDGELEVEL(ACCORDINGTOREVISEDBLOOM'STAXONOMY)	PSOsADDRESSED
CO1	Recognize cases where the Binomialdistribution could be an appropriatemodel.	K1	PSO2
CO2	Able to apply the Poissondistributiontoavarietyof problems.	K3	PSO5
CO3	Explorethekeypropertiessuchasthemomentgeneratingfunction,cumulantofanegativebinomialdistribution.	K1&K3	PSO3
CO4	Understandand derive the formulaforthe geometric and hypergeometricprobabilitymassfunction.	K1,K2&K3	PSO4
CO5	Explain and evaluate multinomialandpowerseriesdistribution	K2&K4	PSO6

MappingofC0swithPSOs

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

MappingofC0swithPOs

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: ♦StronglyCorrelated–**3** ♦ModeratelyCorrelated–**2**

♦ WeaklyCorrelated-**1**

COURSEDESIGNER:

1. **Mrs.K.Bhuvaneswari**
2. **Ms.K.ManoF**

orwardedBy

Dr.E.Helena

IB.Sc.STATISTICS

SEMESTER II

Forthosewhojoinedin2019onwards

Skill Development-100%

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USST	19G2ACST2	Algebra	Lecture	5	5

COURSEDESCRIPTION

This course introduces the concept of classical algebra to the studentsofStatistics

COURSEOBJECTIVES

To enable the students to learn the fundamentals of Algebra and thisincludes topics like binomial, exponential and logarithmic series and theoryofequations.

UNIT–I BINOMIALSERIES (15HRS.)

Summationandapproximationusingbinomial Series.

UNIT–II EXPONENTIALANDLOGARITHMICSERIES (15HRS.)

Exponentialandlogarithmicseries(Proofnot expected). **Summationandapproximationusingexponential and logarithmic series– (**SelfStudy**).**

UNIT–III THEORYOFEQUATIONS (15HRS.)

Introduction–remaindertheorem-anequation of n^{th} degree hasexactly n roots - relation between the roots and coefficients-irrational roots – imaginaryroots–Symmetricfunctionsofthe roots in terms of thecoefficients.Sumofthepowersoftheroots(Newton‟stheorem)

UNIT–IV TRANSFORMATIONOFEQUATIONS (15HRS.)

Transformation of equations –reciprocal roots - reciprocal equations – propertiesofequations–removalofterms–transformationingeneral

UNIT–V THENATUREOFTHEROOTSOFTHEEQUATION (15HRS.)

Descartesruleofsigns–Rolles"theorem–multipleroots– solutionsofnumericalequations- NewtonsmethodandHonersmethodtosolvealgebraicequations.

TEXT:

T.K.ManicavachagomPillay,TNatarajanandK.S.Ganapathy,*Algebra*V olumeI,S.Viswanathan(PrintersandPublishers),Pvt.Ltd.(2013).

UNITI-Chapter3:Sections10,12&14,

UNITII-Chapter4:Sections1-9,11-12

UNITIII,IV,V-Chapter6:Sections1-30

REFERENCES:

1. P.R.Vittal and V.Malini, *Algebra and Trigonometry*, MarghamPublications(2008).
2. SudhirKPundirSingh,*AlgebraandTrigonometry*,MeeratPragathirakasha n(2003)

COURSECONTENTS&LECTURESCHEDULE:

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
UNIT-1BINOMIALSERIES				
1.1	SummationusingbinomialSeries.	8	Chalk &Talk	BlackBoard
1.2	ApproximationusingbinomialSeries.	7	Chalk &Talk	BlackBoard
UNIT-2EXPONENTIALANDLOGARITHMICSERIES				
2.1	Exponentialseries	5	Chalk &Talk	BlackBoard
2.2	Logarithmicseries.	6	Chalk &Talk	BlackBoard
2.3	Summation and ApproximationofExponentialandLogarithmicseries	4	Discussion	BlackBoard
UNIT-3THEORYOFEQUATIONS				
3.1	Remaindertheorem	2	Chalk &Talk	BlackBoard
3.2	anequationofnthdegreehasexactlynroots	2	Chalk &Talk	BlackBoard
3.3	relationbetweentherootsandcoefficients-irrationalroots–imaginaryroots	6	Chalk &Talk	BlackBoard
3.4	Symmetricfunctionsoftherootsintermsofthecoefficients. Sum of the powersoftheroots	5	Chalk &Talk	BlackBoard
UNIT-4TRANSFORMATIONOFEQUATIONS				
4.1	Transformationofequations	4	Chalk &Talk	BlackBoard

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
4.2	Reciprocalrootsandreciprocalequations	4	Chalk &Talk	BlackBoard
4.3	Propertiesofequations	4	Chalk &Talk	BlackBoard
4.4	Transformationingeneral	3	Chalk &Talk	BlackBoard
UNIT-5THENATUREOFTHEROOTSOFTHEEQUATION				
5.1	Descartesruleofsigns	3	Chalk &Talk	BlackBoard
5.2	Rolles‟theorem	3	Chalk &Talk	BlackBoard
5.3	Multipleroots	3	Chalk &Talk	BlackBoard
5.4	Solutions of numericalequations	3	Chalk &Talk	BlackBoard
5.5	NewtonsmethodandHonersmethodtosolvealgebraicequations.	3	Chalk &Talk	BlackBoard

Levels	C1	C2	C3	C4	C5	TotalScholasticMarks	NonScholasticMarks C6	CIA Total	% ofAssessment
	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%
NonScholastic	-	-	-	-	-		5	5	12.5%
Total	10	10	5	5	5	35	5	40	100%

CIA	
Scholastic	35
NonScholastic	5
	40

- ✓ **ThelevelsofCIAAssessmentbasedonRevisedBloom'sTaxonomyare:**

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

EVALUATIONPATTERN

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

COURSEOUTCOMES

Onthesuccessfulcompletionofthecourse,studentswillbeableto:

NO.	COURSEOUTCOMES	KNOWLEDGE LEVEL(ACCORDINGTOREVISEDBLOOM'STAXONOMY)	PSOsADDRESSED
CO1	Identifybinomialseriesandsolveproblemsinbinomialexpansion	K1	PSO3
CO2	Identifylogarithmicandexponentialseriesandsolveproblems	K1&K3	PSO5
CO3	Relatetherootsandco-efficientsoftheequationsandRecognizetheimportantmethodsinfindingrootsofthegivenpolynomial	K2&K3	PSO3
CO4	Explainthetransformationsofequations	K1,K2&K3	PSO5
CO5	Examine the nature of the roots andsolvealgebraic equations using Newton's methodand Horner'smethod	K3&K4	PSO3

MappingofC0swithPSOs

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

MappingofC0swithPOs

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

Note: ♦StronglyCorrelated–**3** ♦ModeratelyCorrelated–**2**

♦ WeaklyCorrelated-**1**

COURSEDESIGNER:

1. **Mrs.B.VethamaryJacquline**
2. **Ms.K.Mano**

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Dr.E.Helena

IB.Sc../B.A./B.Com

SEMESTER–I&II

Forthosewhojoinedin2019onwards

Skill Development-100%

PROGRAMME CODE	COURSE CODE	COURSETITLE	CATEGORY	HRS/WEEK	CREDITS
USST	21ST1NME/21ST2NME	Fundamental ofStatistics	Lecture	2	2

COURSEDESCRIPTION

Thiscourseisdesignedtomakethestudentslearnthebasicsofstatistics

COURSEOBJECTIVES

Toenablethestudentsunderstandtheoriginandtheneedofstatisticsandthestatisticaldata.

UNIT–I INTRODUCTION (6HRS.)

Origin,meaningandfunctionsofstatistics–generaluses-relationwithotherdisciplines-limitationsandmisusesofstatistics.

UNIT–II COLLECTIONOFDATA (6HRS.)

Methodsofcollection:Completeenumeration–samplesurvey

UNIT–III SCRUTINYOFDATA (6HRS.)

Primarydata-methodsofcollection-secondarydatasources.

UNIT–IVMEASURESOFCENTRALTENDENCY (6HRS.)

Arithmeticmean-weightedmean–median-mode

UNIT–V MEASURESOFDISPERSION (6HRS.)

Range-standarddeviation

TEXT:

S.P.Gupta,*StatisticalMethods*,SultanChand&Sons,Revisededition(2014).

REFERENCES:

1. S.C.GuptaandV.K.Kapoor,*FundamentalsofMathematicalStatistics*-SultanChand&Sons,Revisededition(2002).
2. Arumugam and Thangapandi Isaac, *Statistics,* New Gammapublishinghouse,(2006).

COURSECONTENTS&LECTURESCHEDULE :

ModuleNo.	Topic	No.ofLectures	TeachingPedagogy	TeachingAids
UNIT-1INTRODUCTION				
1.1	Origin,meaningandfunctionsofstatistics,relationwithotherdisciplines	3	Lecture	PPT&Whiteboard
1.2	Limitationsandmisusesofstatistics	3	Lecture	PPT&Whiteboard
UNIT-2COLLECTIONOFDATA				
2.1	Methodsofcollection:Completeenumeration	3	Chalk&Talk	BlackBoard
2.2	Samplesurvey	3	Chalk&Talk	BlackBoard
UNIT-3SCRUTINYOFDATA				
3.1	Primarydata	2	Lecture	PPT&Whiteboard
3.2	Methodsofcollection	2	Lecture	PPT&Whiteboard
3.3	Secondarydatasources	2	Lecture	PPT&Whiteboard
UNIT-4MEASURESOFCENTRALTENDENCY				
4.1	Arithmeticmean	1	Chalk&Tal	BlackBoard

			k	
4.2	Weightedmean	1	Chalk &Talk	BlackBoard
4.3	Median	2	Chalk &Talk	BlackBoard

4..4	Mode	2	Chalk &Talk	BlackBoard
UNIT-5MEASURESOFDISPERSION				
5.1	Range	2	Chalk &Talk	BlackBoard
5.2	Standarddeviation	4	Chalk &Talk	BlackBoard

Levels	C1	C2	C3	C4	C5	TotalScholasticMarks	NonScholasticMarks C6	CIA Total	% ofAssessment
	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%
NonScholastic	-	-	-	-	-		5	5	12.5%
Total	10	10	5	5	5	35	5	40	100%

CIA	
Scholastic	**35**
NonScholastic	**5**
	40

- ✓ **ThelevelsofCIAAssessmentbasedonRevisedBloom'sTaxonomyare:**

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

EVALUATIONPATTERN

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

COURSEOUTCOMES

Onthesuccessfulcompletionofthecourse,studentswillbeableto:

NO.	COURSEOUTCOMES	KNOWLEDGE LEVEL(ACCORDINGTOREVISEDBLOOM'STAXONOMY)	PSOsADDRESSED
CO1	Summarizetheoriginofstatisticsanditsrelationwithotherdisciplines.	K2	PSO3
CO2	Explain and evaluate variousmeasureofcentraltendency	K3	PSO3
CO3	Examine the various measures ofdispersion	K4	PSO3
CO4	Identifythedirectionandstrengthofacorrelationbetweentwofactors	K1&K4	PSO3
CO5	Form regression equation of linesandsolve	K2&K4	PSO3

MappingofC0swithPSOs

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

MappingofC0swithPOs

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

Note: ♦StronglyCorrelated–**3** ♦ModeratelyCorrelated–**2**

♦ WeaklyCorrelated-**1**

COURSEDESIGNER:

1. **Mrs.K.Bhuvaneswari**
2. **Ms.K.Saranya**

ForwardedBy

Dr.E.Helena

IIB.Sc.STATISTICS

SEMESTER III

Forthosewhojoinedin2019onwards

Skill Development-100%

PROGRAMME CODE	COURSE CODE	COURSETITLE	CATEGORY	HRS/WEEK	CREDITS
USST	19ST3CC5	Continuous Probability Distribution	Lecture	6	4

COURSEDESCRIPTION

Thiscourseisdesignedtoexposethestudentsvariousimportantcontinuouspr obabilitymodels

COURSEOBJECTIVES

Toenablethestudentsunderstandthecontinuousprobabilitydistribution andreallifesituationswherethesedistributionsprovideappropriatemodels.

UNIT–I NORMALDISTRIBUTION (18HRS.)

Normal distribution as a limiting form of binomial distribution- chiefcharacteristicsofthenormaldistribution– mode,median,momentgenerating function of normal distribution- cumulant generating function ofnormal distribution – moments of normal distribution – a linear combinationof independent normal variates - points of inflexion of normal curves – meandeviationaboutmeanfornormaldistribution- areaproperty–errorfunction -importanceofnormaldistributions-fittingofnormaldistribution

UNIT–IIRECTANGULAR,BETAANDGAMMADISTRIBUTIONS(18HRS.)

Momentsofrectangulardistribution-m.g.fofrectangulardistribution – characteristics function of rectangular distribution - mean deviation aboutmean of rectangular distribution – m.g.f of gamma distribution – cumulantgeneratingfunctionofgammadistribution– additivefunctionofgammadistribution-betadistributionoffirstkind– betadistribution of secondkind.

UNIT–IIIEXPONENTIALANDCAUCHYDISTRIBUTIONS (18HRS.)

Momentgeneratingfunctionofexponentialdistribution-**characteristicfunctionofCauchydistribution–momentsofCauchydistribution–(**SelfStudy).

UNIT–IV SAMPLINGDISTRIBUTION(CHI-SQUARE) (18HRS.)

Introduction–derivationofthe χ^2distribution – moment generating functionofthe χ^2distribution–sometheoremson χ^2distribution–linear transformation–applicationsof χ^2distribution.

UNIT–V SAMPLINGDISTRIBUTION(t,F) (18HRS.)

Introduction–student"s„t"distribution–applicationsof„t"distribution – distribution of sample correlation coefficient when population correlation coefficient $\rho=0$ - fdistribution – applications of f distribution – relation betweentandfdistributions–relationbetweenfand χ^2distribution.

TEXT:

S.C.Guptaand V.K.Kapoor, *Fundamentalsof Mathematical Statistics,* SultanChand&Sons,Revisededition(2014).Chapters:9,

15,16

REFERENCES:

1. Arumugam and Thangapandi Isaac, *Statistics*, New Gammapublishinghouse,(2012).
2. S.P.Gupta,*StatisticalMethods*,SultanChand&Sons,Revisededition(2014).

COURSECONTENTS&LECTURESCHEDULE:

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
UNIT-1NORMALDISTRIBUTION				
1.1	Normaldistributionasalimitingformofbinomialdistribution-chiefcharacteristicsofthenormaldistribution	4	Chalk &Talk	BlackBoard
1.2	Mode,median,momentgeneratingfunctionofnormaldistribution-cumulantgeneratingfunctionofnormaldistribution	5	Chalk &Talk	BlackBoard
1.3	Linearcombination ofindependentnormalvariates	1	Chalk &Talk	BlackBoard
1.4	Meandeviationaboutmeanfornormaldistribution-areaproperty	3	Chalk &Talk	BlackBoard
1.5	Importanceofnormaldistributions	2	Chalk &Talk	BlackBoard
1.6	Fittingofnormaldistribution	3	Chalk &Talk	BlackBoard
UNIT2RECTANGULAR,BETAANDGAMMADISTRIBUTIONS				
2.1	Momentsofrectangulardistribution	4	Chalk &Talk	BlackBoard
2.2	m.g.fofrectangulardistribution – characteristics function ofrectangulardistribution	4	Chalk &Talk	BlackBoard
2.3	m.g.fofgammadistribution–cumulantgeneratingfunctionofgammadistribution	4	Chalk &Talk	BlackBoard
2.4	betadistributionoffirstkind	3	Chalk &Talk	BlackBoard

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
2.5	Betadistributionofsecondkind.	3	Chalk &Talk	BlackBoard
UNIT-3EXPONENTIALANDCAUCHYDISTRIBUTIONS				
3.1	Momentgeneratingfunctionofexponentialdistribution	6	Chalk &Talk	BlackBoard
3.2	characteristic function ofCauchydistribution	6	Discussion	BlackBoard
3.3	MomentsofCauchydistribution.	6	Discussion	BlackBoard
UNIT-4SAMPLINGDISTRIBUTION(CHI-SQUARE)				
4.1	Derivationoftheχ^2distribution	4	Chalk &Talk	BlackBoard
4.2	Momentgeneratingfunctionoftheχ^2 distribution	4	Chalk &Talk	BlackBoard
4.3	Lineartransformation	4	Chalk &Talk	BlackBoard
4.4	Applications ofχ^2 distribution.	6	Chalk &Talk	BlackBoard
UNIT-5SAMPLINGDISTRIBUTION(t,F)				
5.1	student‟s„t‟distribution	3	Chalk &Talk	BlackBoard
5.2	applicationsof„t‟distribution	4	Chalk &Talk	BlackBoard
5.3	applicationsoffdistribution	4	Chalk &Talk	BlackBoard
5.4	relationbetweentandfdistributions	3	Chalk &Talk	BlackBoard
5.5	Relationbetweenfandχ^2 distribution.	4	Chalk &Talk	BlackBoard

Levels	C1	C2	C3	C4	C5	TotalScholasticMarks	NonScholasticMarks C6	CIA Total	% ofAssessment
	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%
NonScholastic	-	-	-	-	-		5	5	12.5%
Total	10	10	5	5	5	35	5	40	100%

CIA	
Scholastic	35
NonScholastic	5
	40

- ✓ **ThelevelsofCIAAssessmentbasedonRevisedBloom'sTaxonomyare:**

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

EVALUATIONPATTERN

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

COURSEOUTCOMES

Onthesuccessfulcompletionofthecourse,studentswillbeableto:

NO.	COURSEOUTCOMES	KNOWLEDGE LEVEL(ACCORDINGTOREVISEDBLOOM'STAXONOMY)	PSOsADDRESSED
CO1	Recognizecaseswherethenormal distribution could be anappropriate.	K1	PSO1&PSO2
CO2	Understandandderivethemoments,momentgeneratingfunctions, characteristic functionsofrectangular,betaand gammadistribution.	K1&K2	PSO3
CO3	Explore the key properties suchasthemomentgeneratingfunctionandcumulantsofexponential and Cauchydistribution	K3&K4	PSO3
CO4	Derivechisquaredistributionand applyinreallifeproblem	K1,K2&K3	PSO5
CO5	StateandapplythedefinitionsofthetandFdistributions	K2&K3	PSO6

MappingofC0swithPSOs

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	2	2	2	2	3	2
CO5	2	2	2	2	2	3

MappingofC0swithPOs

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

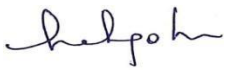
Note: ♦StronglyCorrelated–**3** ♦ModeratelyCorrelated–**2**

♦ WeaklyCorrelated-**1**

COURSEDESIGNER:

1. **Dr.P.Vetriselvi**
2. **Ms.D.K.PonOvya**

ForwardedBy



Dr.E.Helena

IIB.Sc.STATISTICSS

EMESTER III

Forthosewhojoinedin2019onwards

PROGRAMME CODE	COURSE CODE	COURSET ITLE	CATEGORY	HRS/WEEK	CREDITS
USST	19ST3CC6	Sampling Theory	Lecture	6	4

COURSEDESCRIPTION

Thiscourseisintroducedtothestudentstoimpartthebasicknowledgeofstatisticalsamplingconcepts.

COURSEOBJECTIVES

To enablethe students understand the concept of statistical samplingandtomakethemconductsamplesurveyindependentlybyselectingthesuitablesamplingtechniques.

UNIT–I SAMPLESURVEY (18HRS.)

CensusandSamplesurveys-principlestepsinsamplesurvey-principlesofsamplesurvey-samplingandnon-samplingerrors-**advantages of sampling over complete census – (**Self Study) - limitationsofsampling.

UNIT–II SIMPLERANDOMSAMPLING (18HRS.)

Sampling from finite population - **simple random sampling with andwithoutreplacement–(**SelfStudy)– procedure of selecting a randomsample-unbiasedestimate,varianceoftheestimates–finitepopulationcorrection-estimationofstandarderrorfromasample.

UNIT–IIISTRATIFIEDRANDOMSAMPLING (18HRS.)

Stratified random sampling - properties of the estimates - unbiasedestimates of the mean and variance of the estimates of the mean-optimumandproportionalallocations–relativeprecisionofastratifiedsamplingand

simplerandomsampling-estimationofgaininprecisioninstratifiedsampling.

UNIT–IV SYSTEMATICSAMPLING (18HRS.)

Systematic sampling - estimate of mean and variance of the estimatedmean–comparisonofsimpleandstratifiedwithsystematicrandomsampling,systematicsamplingwithclustersampling,methodsforpopulationswithlineartrend.

UNIT–V RATIOESTIMATOR (18HRS.)

Ratioestimators: Ratio estimates, variance of the ratio estimates -Bias of the ratio estimates. Regression estimators: Linear regressionestimate regression estimates with pre assigned b-regression estimateswhenbiscomputedfromthesample.

TEXT:

1. S.C.Gupta,andV.K.Kapoor,*Fundamentals of Applied Statistics*,SultanChand&Co.,11thedition(2014).
2. WilliamG.Cochran,*SamplingTechniques*,JohnWileySons(1999).

REFERENCES:

1. DarogaSinghandF.S.Choudary,*TheoryandAnalysisof SampleSurveyDesigns*,Newageinternationalpublishers(1986).
2. P.V.SukhatameandB.V.Sukhatame,*SamplingTheoryofSurveyswithApplications*,ISASpublishers,3rdEdition(1957).
3. S.Sampath,*SamplingTheoryandMethods*,NarosaPublishingHouse(2001).

COURSECONTENTS&LECTURESCHEDULE:

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
UNIT-1SAMPLESURVEY				
1.1	CensusandSamplesurveys	3	Lecture	PPT& White board
1.2	Principlesteps insamplesurvey	4	Lecture	PPT& White board
1.3	Samplingandnon-samplingerrors	4	Lecture	PPT& White board
1.4	Advantagesofsamplingovercompletecensus	4	Lecture	PPT& White board
1.5	Limitationsofsampling.	3	Lecture	Smart Board
UNIT-2SIMPLERANDOMSAMPLING				
2.1	Samplingfromfinitepopulation	3	Chalk &Talk	BlackBoard
2.2	Simplerandomsamplingwithandwithoutreplacement	4	Discussion	BlackBoard
2.3	Procedureofselectingarandomsample	4	Chalk &Talk	BlackBoard
2.4	Unbiased estimate, variance oftheestimates	4	Chalk &Talk	BlackBoard
2.5	Estimationofstandarderrorfromasample	3	Chalk &Talk	BlackBoard
UNIT-3STRATIFIEDRANDOMSAMPLING				
3.1	Stratifiedrandomsampling	2	Chalk &Talk	BlackBoard
3.2	Propertiesoftheestimates	3	Chalk&	Black

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
			Talk	Board
3.3	Unbiased estimates of the meanand variance of the estimates ofthemean	3	Chalk &Talk	BlackBoard
3.4	Optimumandproportionalallocations	2	Chalk &Talk	BlackBoard
3.5	Relativeprecisionofastratifiedsamplingandsimplerandomsampling	5	Chalk &Talk	BlackBoard
3.6	Estimation of gain in precisioninstratifiedsampling	3	Chalk &Talk	BlackBoard
UNIT-4SYSTEMATICSAMPLING				
4.1	Estimateofmeanandvarianceoftheestimatedmean	6	Chalk &Talk	BlackBoard
4.2	Comparisonofsimpleandstratifiedwithsystematicrandomsampling,systematicsamplingwithclustersampling,	7	Chalk &Talk	BlackBoard
4.3	Methodsforpopulationswithlineartrend	5	Chalk &Talk	BlackBoard
UNIT-5RATIOESTIMATOR				
5.1	Ratioestimates	5	Chalk &Talk	BlackBoard
5.2	varianceoftheratioestimates	4	Chalk &Talk	BlackBoard
5.3	Biasoftheratioestimates	4	Chalk &Talk	BlackBoard
5.4	Estimateregressionestimateswithpreassignedb-regressionestimateswhenbiscomputedfromthesample	5	Chalk &Talk	BlackBoard

Levels	C1	C2	C3	C4	C5	TotalScholasticMarks	NonScholasticMarks C6	CIA Total	% ofAssessment
	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%
NonScholastic	-	-	-	-	-		5	5	12.5%
Total	10	10	5	5	5	35	5	40	100%

CIA	
Scholastic	35
NonScholastic	5
	40

- ✓ **ThelevelsofCIAAssessmentbasedonRevisedBloom'sTaxonomyare:**

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

EVALUATIONPATTERN

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

COURSEOUTCOMES

Onthesuccessfulcompletionofthecourse,studentswillbeableto:

NO.	COURSEOUTCOMES	KNOWLEDGE LEVEL(ACCORDINGTOREVISEDBLOOM'STAXONOMY)	PSOsADDRESSED
CO1	Illustratecensusandsamplingandtheiradvantagesanddisadvantages	K2	PSO1&PSO2
CO2	DifferentiatestheSRSWOR,SRSWR,methods of SRS – lottery method andrandomnumbertablemethod	K1&K2	PSO2
CO3	Understand and identify stratifiedrandomsampling	K1&K3	PSO5
CO4	Understandandidentifysystematicsampling.	K4	PSO6
CO5	Analyseratioestimator	K2&K4	PSO2

MappingofC0swithPSOs

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	2	2	3	2
CO4	2	2	2	2	2	3
CO5	2	3	2	2	2	2

MappingofC0swithPOs

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

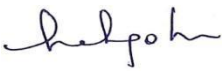
Note: ♦StronglyCorrelated–**3** ♦ModeratelyCorrelated–**2**

♦ WeaklyCorrelated-**1**

COURSEDESIGNER:

1. **Dr.P.Vetriselvi**
2. **Ms.D.K.PonOvya**

ForwardedBy



Dr.E.Helena

IIB.Sc.STATISTICS

SEMESTER III

Forthosewhojoinedin2019onwards

Skill Development-100%

PROGRAMME CODE	COURSE CODE	COURSETITLE	CATEGORY	HRS/WEEK	CREDITS
USST	21G3ACST3	LinearProgramming	Lecture	5	5

COURSEDESCRIPTION

Thecourseprovidesappropriatemethodsfortheefficientcomputationofoptimalsolutionstoproblemswhich are modelled by objective functionandlinearconstraints.

COURSEOBJECTIVES

Thiscourseenablethestudentsconvertreallifeproblemsintoa Mathematicalproblemandtosolvethemusingdifferenttechniqueslikegraphicalmethod,simplexmethod,Big–Mmethod,Two-phasemethodanddualsimplexmethod.

UNIT–I MATHEMATICALFORMULATIONOFLPP (15HRS.)

Mathematical formulation – classification - graphical solutions of lpp- **simple examples of lpp - slack and surplus variables - standard form oflpp–(**SelfStudy)**.**

UNIT–II SIMPLEXMETHOD (15HRS.)

Definition of objective function - linear and non-negative constraints - feasible solution - basic feasible solution - optimum basic feasible solution - degenerate solution - evaluation and net evaluation - unbounded solutionsandconditionsforoptimalityofafeasiblesolutionintermsofnetevaluations (no proof) - pivotal element - computational procedure of thesimplexmethod-tieforenteringbasisvectorandleavingbasisvector-solutionusingartificialvariables.

UNIT –III METHODANDTWOPHASEMETHOD (15HRS.)

Charne‟smethodofpenalitiesandtwophasesimplexmethod-restrictedandunrestrictedvariables-inverseofamatrixusingsimplexmethod

UNIT–IV TRANSPORTATIONPROBLEM (15HRS.)

Mathematicalformulation-existenceoffeasiblesolution-feasiblesolutionbynorthwestcornerrule-matrixminimamethod-Vogel‟sapproximation method -optimal solution to a TP by modified distributionmethod-degeneracyinTP-unbalancedTP.

UNIT–V ASSIGNMENTPROBLEM (15HRS.)

Mathematicalformulation-assignmentalgorithmruleforfindingoptimalassignment-unbalancedAP-travellingsalesmanproblemasanAP.

TEXT:

KantiSwarup,P.K.GuptaandManMohan,*OperationResearch*,SultanChandandsons,NewDelhi-11thEdition(2003).

REFERENCES:

1. P.K.GuptaandManMohan,*ProblemsinOperationResearch*,SultanChandandsons,NewDelhi,11thEdition(2007).
2. PremKumarGuptaandD.S.Hira,*OperationsResearch*,S.ChandandCompany,RamNagar,NewDelhi,Edition(2007).

COURSECONTENTS&LECTURESCHEDULE:

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
UNIT-1MATHEMATICALFORMULATIONOFLPP				
1.1	Mathematicalformulation	3	Chalk &Talk	BlackBoard
1.2	Classification	3	Chalk &Talk	BlackBoard
1.3	Graphicalsolutionsoflpp	3	Chalk &Talk	BlackBoard
1.4	Simpleexamplesoflpp	2	Discussion	BlackBoard
1.5	Slackandsurplusvariables	2	Discussion	BlackBoard
1.6	Standardformoflpp	2	Chalk &Talk	BlackBoard
UNIT-2SIMPLEXMETHOD				
2.1	Linearandnon-negativeconstraints	1	Chalk &Talk	BlackBoard
2.2	Feasiblesolution	1	Chalk &Talk	BlackBoard
2.3	Basicfeasiblesolution,optimumbasicfeasiblesolution	3	Chalk &Talk	BlackBoard
2.4	Unboundedsolutionsandconditionsforoptimalityofafeasible solution in terms of netevaluations	3	Chalk &Talk	BlackBoard
2.5	Computationalprocedureofthesimplemethod	4	Chalk &Talk	BlackBoard
2.6	Solutionusingartificialvariables	3	Chalk &Talk	BlackBoard

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
UNIT-3BIG–MMETHODANDTWOPHASEMETHOD				
3.1	Charne‟smethodofpenalitiesand twophasesimplexmethod	6	Chalk &Talk	BlackBoard
3.2	restrictedandunrestrictedvariables	4	Chalk &Talk	BlackBoard
3.3	inverseof amatrix usingsimplexmethod.	5	Chalk &Talk	BlackBoard
UNIT-4TRANSPORTATIONPROBLEM				
4.1	Mathematicalformulation	2	Chalk &Talk	BlackBoard
4.2	Existenceoffeasible solution	2	Chalk &Talk	BlackBoard
4.3	Feasiblesolutionbynorthwestcornerrule	2	Chalk &Talk	BlackBoard
4.4	Vogel‟sapproximationmethod	4	Chalk &Talk	BlackBoard
4.5	OptimalsolutiontoaTPbymodifieddistributionmethod	2	Chalk &Talk	BlackBoard
4.6	UnbalancedTP	3	Chalk &Talk	BlackBoard
UNIT-5ASSIGNMENTPROBLEM				
5.1	Mathematicalformulation	2	Chalk &Talk	BlackBoard
5.2	Assignmentalgorithmruleforfindingoptimalassignment	5	Chalk &Talk	BlackBoard
5.3	UnbalancedAP	4	Chalk &Talk	BlackBoard
5.4	Travellingsalesmanproblemasa nAP.	4	Chalk &Talk	BlackBoard

Levels	C1	C2	C3	C4	C5	TotalScholasticMarks	NonScholasticMarks C6	CIA Total	% ofAssessment
	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%
NonScholastic	-	-	-	-	-		5	5	12.5%
Total	10	10	5	5	5	35	5	40	100%

CIA	
Scholastic	35
NonScholastic	5
	40

- ✓ **ThelevelsofCIAAssessmentbasedonRevisedBloom'sTaxonomyare:**

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

EVALUATIONPATTERN

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

COURSEOUTCOMES

Onthesuccessfulcompletionofthecourse,studentswillbeableto:

NO.	COURSEOUTCOMES	KNOWLEDGE LEVEL(ACCORDINGTOREVISEDBLOOM'STAXONOMY)	PSOsADDRESSED
CO1	Formulatelinearprogrammingproblemsandsolvebygraphicalmethod	K2	PSO1&PSO2
CO2	Classifysimplexmethodtosolvelinearprogrammingproblems	K1,K2&K3	PSO3
CO3	IdentifyandsolvetwophaseandBig –Mmethod	K2&K3	PSO3
CO4	Recognize and formulatetransportationandfindtheoptimalsolution	K1,K2&K3	PSO2 &PSO3
CO5	Recognize and formulate assignmentproblemsandfindtheoptimalsolution.	K2&K3	PSO3

MappingofC0swithPSOs

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	2	3	3	2	2	2
CO5	2	2	3	2	2	2

MappingofC0swithPOs

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

Note: ♦StronglyCorrelated–**3** ♦ModeratelyCorrelated–**2**

♦ WeaklyCorrelated-**1**

COURSEDESIGNER:

1. **Dr.R.Srija**
2. **Ms.K.ManoF**

ForwardedBy

Dr.E.Helena

IIB.Sc.STATISTICS

SEMESTER III

Forthosewhojoinedin2019onwards

Employability-100%

PROGRAMME CODE	COURSE CODE	COURSETITLE	CATEGORY	HRS/WEEK	CREDITS
USST	19ST3SB1	Practical Statistics I	Lecture&Practical	2	2

COURSEDESCRIPTION

Thecourseprovidesproblemsrelatedtomeasureofcentraltendency,measureofdispersion,andmeasuresofassociationofattributes.

COURSEOBJECTIVES

Toexposethestudentstheanalysisofstatisticaltechniquesinreallifesituations.

1. Problemsbasedonmeasureofcentraltendency
2. Problemsbasedonmeasureofdispersion..
3. Problemsbased on moments, skewness and kurtosis
4. ComputationofKarlPearsoncorrelationco-efficient.
5. Correlationcoefficientforabivariatefrequencydistribution.
6. Concurrentdeviation
7. Rankcorrelation.
8. RegressionEquations..
9. Computationofvariousmeasuresofassociationsofattributes.

TEXT:

1. S.C.Gupta and V.K.Kapoor, *Fundamentals of Mathematicalstatistics*,SultanChand&Sons,Revisededition(2002).

Levels	C1	C2	C3	C4	C5	TotalScholasticMarks	NonScholasticMarks C6	CIA Total	% ofAssessment
	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%
NonScholastic	-	-	-	-	-		5	5	12.5%
Total	10	10	5	5	5	35	5	40	100%

CIA	
Scholastic	35
NonScholastic	5
	40

- ✓ **ThelevelsofCIAAssessmentbasedonRevisedBloom'sTaxonomyare:**

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

EVALUATIONPATTERN

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

COURSEOUTCOMES

Onthesuccessfulcompletionofthecourse,studentswillbeableto:

NO.	COURSEOUTCOMES	KNOWLEDGE LEVEL(ACCORDINGTOREVISEDBLOOM'STAXONOMY)	PSOsADDRESSED
CO1	Calculatemeasureofcentralte ndency.	K1	PSO1&PSO2
CO2	Classifymeasuresofdispersion,sk ewnessandkurtosis.	K1,K2	PSO5 &PSO 6
CO3	Computecorrelation,regressionandmeas uresofassociationofattributes.	K3,K4	PSO5 &PSO 6

MappingofC0swithPSOs

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

MappingofC0swithPOs

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

Note: ♦StronglyCorrelated–**3** ♦ModeratelyCorrelated–**2**

♦ WeaklyCorrelated-**1**

COURSEDESIGNER:

1. **Dr.P.Vetriselvi**
2. **D.K.PonOvyaF**

orwardedBy

Dr.E.Helena

IIB.Sc.STATISTICSS

EMESTER IV

Forthosewhojoinedin2019onwards

Skill Development-100%

PROGRAMME CODE	COURSE CODE	COURSET ITLE	CATEGORY	HRS/WEEK	CREDITS
USST	19ST4CC7	Estimation Theory	Lecture	6	4

COURSEDESCRIPTION

Thiscourseintroducestheconceptsofstatisticalestimationtheory.

COURSEOBJECTIVES

To enable the students understand the various statistical estimationmethodsofparametersanditsapplicationsinsolvingreallifeproblems

UNIT–IPOINTESTIMATIONTHEORY (18HRS.)

Parametricestimation:estimator-characteristicsofanestimator-consistencyandunbiasednessofanestimator-Cramer-Raoinequality.Efficiency-asymptoticefficiencyofanestimator-estimatorsbasedonsufficient statistics- Neyman‟s factorization theorem (without proof) - Rao-Blackwelltheorem

UNIT–II METHODSOFPOINTESTIMATION-I (18HRS.)

Methodsofpointestimation-**methodofMaximumLikelihoodEstimator(MLE)–(**SelfStudy)-PropertiesofMLEs(withoutproof) –ProblemsbasedonMLEs.

UNIT–III METHODSOFPOINTESTIMATION-II (18HRS.)

Method of moments – problems-method of least squares - method ofminimumChi-square-methodofminimumvariance-MinimumVarianceUnbiasedEstimation(MVUE)-ProblemsbasedonMVUE.

UNIT–IV INTERVALESTIMATION-I (18HRS.)

Concept of interval estimation - interval estimation in case of largesamples- confidence interval for proportions, means and variances based onnormaldistribution.

UNIT–V INTERVALESTIMATION-II (18HRS.)

Interval estimation for small samples – confidence intervals for means,variances,correlationcoefficientandregressioncoefficientbasedonChisquare,Student"st,andfdistributions.

TEXT:

S.C.GuptaandV.K.Kapoor,*Fundamentals ofMathematicalStatistics*,SultanChand&Sons,NewDelhi,11thEdition(2002).

REFERENCES:

1. M.KendallandA.Stuart,*TheadvancedtheoryofStatistics*,Vol.II,CharlesGriffin,(1961).
2. V.K.Rohatgi,*StatisticalInference*,JohnWileyandsons(1984).
3. R.V Hogg, A.T.Craig. and Tannis, *Introduction to MathematicalStatistics*,PrenticeHall,England(1995).

COURSECONTENTS&LECTURESCHEDULE:

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
UNIT-1POINTESTIMATIONTHEORY				
1.1	Parametricestimation:estimator	3	Chalk &Talk	BlackBoard
1.2	characteristicsofanestimator	3	Chalk &Talk	BlackBoard
1.3	consistencyandunbiasednessofanestimator	4	Chalk &Talk	BlackBoard
1.4	Cramer-Raoinequality	2	Chalk &Talk	BlackBoard
1.5	asymptoticefficiencyofanestimator	2	Chalk &Talk	BlackBoard

1.6	Neyman‟sfactorizationtheorem	2	Chalk &Talk	BlackBoard
1.7	Rao-Blackwelltheorem.	2	Chalk &Talk	BlackBoard
UNIT-2METHODSOFPOINTESTIMATION-I				
2.1	Methodsofpointestimation-methodofMaximumLikelihoodEstimator(MLE)	6	Discussion	BlackBoard
2.2	PropertiesofMLEs	4	Chalk &Talk	BlackBoard
2.3	ProblemsbasedonMLEs.	8	Chalk &Talk	BlackBoard
UNIT-3METHODSOFPOINTESTIMATION				
3.1	Methodofmoments	3	Chalk &Talk	BlackBoard
3.2	Methodofleastsquares	3	Chalk &Talk	BlackBoard

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
3.3	MethodofminimumChi-square	3	Chalk &Talk	BlackBoard
3.4	Methodofminimumvariance	3	Chalk &Talk	BlackBoard
3.5	MinimumVarianceUnbiasedEstimation(MVUE)	2	Chalk &Talk	BlackBoard
3.6	ProblemsbasedonMVUE.	4	Chalk &Talk	BlackBoard
UNIT-4INTERVALESTIMATION–I				
4.1	Conceptofintervalestimation	5	Chalk &Talk	BlackBoard
4.2	intervalestimationincaseoflargesamples	13	Chalk &Talk	BlackBoard
UNIT-5INTERVALESTIMATION-II				
5.1	Intervalestimationforsmallsamples	4	Chalk &Talk	BlackBoard
5.2	Confidenceintervalsfor means	4	Chalk &Talk	BlackBoard

5.3	Confidenceintervalsforvariances	4	Chalk &Talk	BlackBoard
5.4	Confidenceintervalsforcorrelationcoefficient	4	Chalk &Talk	BlackBoard
5.5	RegressioncoefficientbasedonChisquare,Student"st,andFdistributions.	6	Chalk &Talk	BlackBoard

Levels	C1	C2	C3	C4	C5	TotalScholasticMarks	NonScholasticMarks C6	CIA Total	% ofAssessment
	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%
NonScholastic	-	-	-	-	-		5	5	12.5%
Total	10	10	5	5	5	35	5	40	100%

CIA	
Scholastic	35
NonScholastic	5
	40

- ✓ **ThelevelsofCIAAssessmentbasedonRevisedBloom'sTaxonomyare:**

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

EVALUATIONPATTERN

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

COURSEOUTCOMES

Onthesuccessfulcompletionofthecourse,studentswillbeableto:

NO.	COURSEOUTCOMES	KNOWLEDGE LEVEL(ACCORDINGTOREVISEDBLOOM'STAXONOMY)	PSOsADDRESSED
CO1	Explain and compute pointestimation	K1	PSO1&PSO2
CO2	Estimate maximum likelihoodestimator	K1,K2,	PSO3
CO3	Analyseminimumvarianceunbiasedestimator	K1&K3	PSO5
CO4	Computeintervalestimationinlargesamplesusingnormaldistribution	K3&K4	PSO5 &PSO6
CO5	DistinguishIntervalestimationinsmall samples based on F, chi squareandtdistribution	K3&K4	PSO5 &PSO6

MappingofC0swithPSOs

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	2	2	3	2
CO4	2	2	2	2	3	3
CO5	2	2	2	2	3	3

MappingofC0swithPOs

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

Note: ♦StronglyCorrelated–**3** ♦ModeratelyCorrelated–**2**

♦ WeaklyCorrelated-**1**

COURSEDESIGNER:

1. **Dr.P.Vetriselvi**
2. **Ms.D.K.PonOvya**

ForwardedBy

Dr.E.Helena

II B.Sc STATISTICS

SEMESTER –IV

For those who joined in 2021 onwards

Employability-60%

Skill Development-40%

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USST	22ST4CC8	Appliedstatistics	Lecture	6	4

COURSE DESCRIPTION

This course provides some of the applications of statistics which includes topics such as time series, index numbers and national income.

COURSE OBJECTIVES

To enable the students understand and appreciate the applications of Statistics

UNIT –I TIME SERIES (18 HRS.)

Concepts of Time series-Components of Time series-Uses-Additive and Multiplicative Models-Measurement of Trend-Least Square Method-Fitting of Linear Trend- Method of Moving Averages

UNIT –IIANALYSIS OF TIME SERIES (18 HRS.)

Seasonal Variations-Simple Average, Ratio to Moving Average, Ratio to Trend, Link relative Method- Cyclical fluctuations-Residual method only-Random Components-Variate difference Method.

UNIT –III INDEX NUMBERS (18 HRS.)

Classification and methods-Tests of adequacy- Chain index numbers - **consumer price index numbers– (**Self Study).

UNIT –IV INDEX NUMBERS CONT. (18 HRS.)

Laspeyer's , Paasche's, Fisher's Kelly's and Marshall Edgeworth Index numbers-Tests for ideal index numbers. Cost of Living index number-Construction and uses.

UNIT –V NATIONAL INCOME (18 HRS.)

National Income-Estimation methods-Uses of National Income Etimate-Computational

difficulties in India**.**

TEXT:

1. S.C.Gupta and V.K.Kapoor, *Fundamentals of Applied Statistics*, Sultan Chand & Sons, Revised edition (2002).
2. Goon. A.M., Gupta.B & Das Gupta.M.K., *Fundamentals of Statistics*,World Press,1987.
3. Agarwal.B.L., Basic Statistics,Anshan Publisher, I edn 2012.

REFERENCES:

1. Elhance. D,N., *Fundamentals of Statistics*, Kitab Mahal,,2010.
2. Croxton &Frederick ., Applied General Statistics, Prentice Hall of India, 1979.

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 TIME SERIES				
1.1	Concepts of Time series	3	Chalk & Talk	Black Board
1.2	Components of Time series-Uses	3	Chalk & Talk	Black Board
1.3	Additive and Multiplicative Models	3	Chalk & Talk	Black Board
1.4	Measurement of Trend-Least Square Method	3	Chalk & Talk	Black Board
1.5	Fitting of Linear Trend	3	Chalk & Talk	Black Board
1.6	Method of Moving Averages.	3	Chalk & Talk	Black Board
UNIT -2 ANALYSIS OF TIME SERIES				
2.1	Seasonal Variations-Simple Average method	3	Chalk & Talk	Black Board
2.2	Ratio to Moving Average, Ratio to Trend	3	Chalk & Talk	Black Board
2.3	Link relative Method, Cyclical fluctuations	3	Chalk & Talk	Black Board

2.4	Residual method only	3	Chalk & Talk	Black Board
2.5	Random Components	3	Chalk & Talk	Black Board
2.6	Variate difference Method	3	Chalk & Talk	Black Board
UNIT 3 INDEX NUMBERS				
3.1	Basic Index numbers and their definitions-	5	Chalk & Talk	Black Board
3.2	Constructions of Whole sale Price Index Numbers and uses	3	Chalk & Talk	Black Board
3.3	Fixed and Chain base index numbers	5	Chalk & Talk	Black Board
3.4	Un weighted and Weighted index numbers.	5	Discussion	Black Board
UNIT 4 INDEX NUMBERS CONT.				
4.1	Lespeyer's , Paasche's Index numbers	4	Chalk & Talk	Black Board
4.2	Fisher's Kelly's and Marshall Edgeworth Index numbers	3	Chalk & Talk	Black Board
4.3	Tests for ideal index numbers.	4	Chalk & Talk	Black Board
4.4	Cost of Living index number	4	Chalk & Talk	Black Board
4.5	Construction and uses	3	Chalk & Talk	Black Board
UNIT 5 NATIONAL INCOME				
5.1	National Income	5	Lecture	PPT & White board
5.2	Estimation methods	3	Lecture	PPT & White board

5.3	Uses of National Income Estimate	5	Lecture	PPT & White board
5.4	Computational difficulties in India	5	Chalk & Talk	Black Board

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% As m
	T1 10 Mks.	T2 10 Mks.	Quiz 5 Mks.	Assign ment 5 Mks	OBT/PPT 5 Mks	35 Mks.	5 Mks.	40Mks.	
K1	2	2	-	-	-	4	-	4	1
K2	2	2	5	-	-	9	-	9	22
K3	3	3	-	-	5	11	-	11	27
K4	3	3	-	5	-	11	-	11	27
Non Scholastic	-	-	-	-	-		5	5	12
Total	10	10	5	5	5	35	5	40	10

CIA	
holastic	;
n Scholastic	;
	)

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

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

EVALUATION PATTERN

	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	Fitting of Linear trend and Calculation of Moving Average.	K2	PSO2
CO 2	Understand the calculation of seasonal variations using different methods and able to find cyclic fluctuations	K1 & K2	PSO5
CO 3	Apply the concept of Index numbers uses and its applications.	K3 & K4	PSO3
CO 4	Prepare cost of living index and other index numbers for real life situations	K1, K3 & K4	PSO5 & PSO6
CO 5	To estimate the national income and to analysis its difficulties.	K3 & K4	PSO5 & PSO6

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**	**3**	**2**
CO3	**2**	**2**	**3**	**2**	**2**	**2**
CO4	**2**	**2**	**2**	**2**	**3**	**3**
CO5	**2**	**2**	**2**	**2**	**3**	**3**

Mapping of C0s with POs

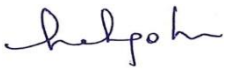
CO/ PSO	PO1	PO2	PO3	PO4
CO1	2	3	2	2
CO2	2	3	2	2
CO3	3	2	2	2
CO4	2	2	3	2
CO5	2	2	2	3

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

COURSE DESIGNER:

1. **Mrs. K. Bhuvaneswari**
2. **Ms. K. Mano**

Forwarded By



Dr. E. Helena

IIB.SC.STATISTICS

SEMESTER IV

Forthosewhojoinedin2019onwards

Skill development-100%

Programmecode	Coursecode	Coursetitle	Category	Hrs/week	Credits
Usst	19G4ACST4	LINEAR ALGEBRA	Lecture	5	5

Coursedescription

This course will focus on matrix as linear transformations relative to abasisofavectorspace.

COURSEOBJECTIVES

Toenablethestudentstounderstandmatrixandvectorspaceconceptswhichcan be applied ingraph theory, linear programming,physicsandchemistryetc.,

Unit–I VECTORSPACES (15hrs.)

Definitionandexamples–subspaces–lineartransformation–spanofaset

Unit–ii BASISANDDIMENSION (15hrs.)

Linearindependence–basisanddimension–rankandnullity-matrixofalineartransformation

Unit–iii INNERPRODUCTSPACES (15HRS.)

Definitionandexamples–orthogonality–orthogonalcomplement

Unit–iv THEORYOFMATRICES (20hrs.)

Algebraofmatrices–typesofmatrices–theinverseofamatrix–elementarytransformations.rankofamatrix**–simultaneouslinearequations –characteristicequationandcayleyhamiltontheorem–eigenvaluesandeigenvectors(selfstudy).**

Unit–v BILINEARFORMS (10hrs.)

Bilinearforms–quadraticforms

TEXT:

S. Arumugam and A.Thanga Pandi Isaac *Modern Algebra*, ScitechPublications(India)PrivateLimited(2003).Chapters5,6,7,8.

REFERENCES:

1. A.R.Vasishtha,*ModernAlgebra,*KrishnaPrakashanMedia(P)Ltd.,Delhi(2006).
2. N.S.Gopalakrishnan,*UniversityAlgebra*,NewAgeInternationalLimited-IIEdition(2005).

COURSECONTENTS&LECTURESCHEDULE:

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
UNIT-1VECTORSPACES				
1.1	Definitionand ExamplesofVectorSpaces	6	Chalk &Talk	BlackBoard
1.2	Subspaces	4	Chalk &Talk	BlackBoard
1.3	LinearTransformation	3	Lecture	PPT& White board
1.4	Spanofaset	2	Chalk &Talk	BlackBoard
UNIT-2BASISANDDIMENSION				
2.1	LinearIndependence	3	Chalk &Talk	BlackBoard
2.2	BasisandDimension	5	Chalk &Talk	BlackBoard
2.3	RankandNullity	3	Chalk &Talk	BlackBoard
2.4	MatrixofaLinearTransformation	4	Chalk &Talk	BlackBoard
UNIT-3INNERPRODUCTSPACES				

3.1	Definition and ExamplesofInnerProductSpace	5	Chalk &Talk	BlackBoard
3.2	Orthogonality	5	Chalk &Talk	BlackBoard
3.3	OrthogonalComplement	5	Chalk &Talk	BlackBoard
UNIT-4THEORYOFMATRICES				

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
4.1	AlgebraofMatrices	3	Lecture	PPT& White board
4.2	TypesofMatrices	3	Lecture	PPT& White board
4.3	TheInverseofaMatrix	3	Chalk &Talk	BlackBoard
4.4	ElementaryTransformations.RankofaMatrix	3	Chalk &Talk	BlackBoard
4.5	CharacteristicEquationand CayleyHamiltonTheorem	3	Discussion	PPT& White board
4.6	EigenValuesandEigenVectors.	5	Discussion	BlackBoard
UNIT-5BILINEARFORMS				
5.1	Bilinearforms	4	Chalk &Talk	BlackBoard
5.2	Quadraticforms	6	Chalk &Talk	BlackBoard

Levels	C1	C2	C3	C4	C5	TotalScholasticMarks	NonScholasticMarks C6	CIA Total	% ofAssessment
	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%
NonScholastic	-	-	-	-	-		5	5	12.5%
Total	10	10	5	5	5	35	5	40	100%

CIA	
Scholastic	35
NonScholastic	5
	40

- ✓ **ThelevelsofCIAAssessmentbasedonRevisedBloom'sTaxonomyare:**

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

EVALUATIONPATTERN

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

COURSEOUTCOMES

Onthesuccessfulcompletionofthecourse,studentswillbeableto:

NO.	COURSEOUTCOMES	KNOWLEDGE LEVEL(ACCORDINGTOREVISEDBLOOM'STAXONOMY)	PSOsADDRESSED
CO1	DefineVectorSpaceandexplainitsvariousconcepts	K1	PSO1
CO2	Explainbasisanddimension	K1,K2,	PSO3
CO3	IllustrateInnerProductSpaces	K1&K3	PSO3
CO4	Definebasicconceptsofmatricesand solve linear equations, AppraiseEigenValueandEigenVectors ofmatrices	K1,K2&K4	PSO4
CO5	Describe bilinear forms andquadraticforms	K2&K4	PSO4

MappingofC0swithPSOs

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

MappingofC0swithPOs

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

Note: ♦StronglyCorrelated–**3** ♦ModeratelyCorrelated–**2**

♦ WeaklyCorrelated-**1**

COURSEDESIGNER:

1. **Mrs.R.Rajeswari**
2. **Dr.M.Rajeswari**

ForwardedBy

Dr.E.Helena

II B.Sc STATISTICS

SEMESTER –IV

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USST	22ST4SB2	Sampling Distribution	Lecture	2	2

COURSE DESCRIPTION

The course provides an application related to the concepts of sampling distribution for large & small samples.

COURSE OBJECTIVES

To expose the students analyze the statistical techniques in real life situations

UNIT – I CHI-SQUARE DISTRIBUTION (6 HRS.)

Introduction – derivation of the χ^2 distribution – moment generating function of the χ^2 distribution –

UNIT – II CHI-SQUARE DISTRIBUTION CONT.(6 HRS.)

Some theorems on χ^2 distribution – linear transformation – applications of χ^2 distribution.

UNIT – III t - DISTRIBUTION (6 HRS.)

Introduction – student's 't' distribution – applications of 't' distribution – distribution of sample correlation coefficient when population correlation coefficient $\rho = 0$ -

UNIT –IV F - DISTRIBUTION (6 HRS.)

f distribution – applications of f distribution – relation between t and f distributions – relation between f and χ^2 distribution.

UNIT –V F - DISTRIBUTION CONT. (6 HRS.)

Relation between t and f distributions – relation between f and χ^2 distribution.

TEXT:

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

REFERENCES:

1. Arumugam and Thangapandi Isaac, *Statistics*, New Gamma publishing house, (2012).
2. S.P.Gupta, *Statistical Methods*, Sultan Chand & Sons, Revised edition (2014).

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 CHI SQUARE DISTRIBUTION				
1.1	Derivation of the χ^2 distribution	3	Chalk & Talk	Black Board
1.2	Moment generating function of the χ^2 distribution	3	Chalk & Talk	Black Board
UNIT -2CHI SQUARE DISTRIBUTION CONT.				
2.1	Linear transformation	3	Chalk & Talk	Black Board
2.2	Applications of χ^2 distribution.	3	Chalk & Talk	Black Board
UNIT -3 t - DISTRIBUTION				
3.1	student's 't' distribution	3	Chalk & Talk	Black Board
3.2	applications of 't' distribution	3	Chalk & Talk	Black Board
UNIT - 4 F - DISTRIBUTION				
4.1	applications of f distribution	6	Chalk & Talk	Black Board
UNIT - 5 F – DISTRIBUTION CONT.				
5.1	Relation between t and f distributions	3	Chalk & Talk	Black Board
5.2	Relation between f and χ^2 distribution.	3	Chalk & Talk	Black Board

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total
	T1 10 Mks.	T2 10 Mks.	Quiz 5 Mks.	Assign ment 5 Mks	OBT/PPT 5 Mks	35 Mks.	5 Mks.	40Mks.
K1	2	2	-	-	-	4	-	4
K2	2	2	5	-	-	9	-	9
K3	3	3	-	-	5	11	-	11
K4	3	3	-	5	-	11	-	11
Non Scholas tic	-	-	-	-	-		5	5
Total	10	10	5	5	5	35	5	40

CIA	
holastic	5
n Scholastic	5
	0

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

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

EVALUATION PATTERN

	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	Recall the definition of a t statistic in terms of statistics of a sample from a normal distribution	K1, K2 & K3	PSO5
CO 2	State and apply the definitions of the t, F and Chisquare distributions in terms of the standard normal.	K2 & K3	PSO5 & PSO6
CO 3	Explain the relation between t, f and χ^2	K3	PSO5 & PSO6

Mapping of C0s with PSOs

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

Mapping of C0s with POs

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

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

COURSE DESIGNER:

1. **Dr. M.Mano Prabha**
2. **Mrs. K. Bhuvaneswari**

Forwarded By

Dr. E. Helena

IIIB.Sc.STATISTICS

SEMESTER V

Forthosewhojoinedin2019onwards

Skill Development-100%

PROGRAMME CODE	COURSE CODE	COURSET ITLE	CATEGORY	HRS/WEEK	CREDITS
USST	19ST5CC9	TESTING OF HYPOTHE SIS	Lecture	5	4

COURSEDESCRIPTION

The course provides the basics of hypothesis testing with emphasis onsomecommonlyencounteredhypothesistestsinstatisticaldataanalysis.

COURSEOBJECTIVES

Toenablethestudentshaveabetterunderstandingontestingofhypothesis instatisticaldataanalysis.

UNIT–I TESTINGOFHYPOTHESIS (15HRS.)

Statistical Hypothesis – Simple and composite hypothesis, Null andalternative Hypothesis, Two types of errors, statistical test, size of a test,level of significance, critical region, power of the test- Steps in solving testingof hypothesis problem - Most powerful test (definition) – Neymann-Pearsonlemma – Simple problems based on Binomial, Poisson, Uniform, Normal &exponentialdistributions.

UNIT–II UNIFORMLYMOSTPOWERFULTESTS (15HRS.)

Powerfunctionandpowercurve(definition)– one parameterexponential family, Monotone likelihood Ratio property- Best critical region -Simple problems based on BCR -UMP tests for the parameters of univariateNormalandExponentialdistributions.

UNIT–III LIKELIHOODRATIOTEST(LRT) (15HRS.)

DefinitionofLRT–Parameterspace-Properties of LRT tests(Statements only) – Theorem based on LRT - Test for the mean of normal

population-Testforthevarianceofnormalpopulation-

Testforequalityofmeansof2independentnormalpopulations–

Testforequalityofvariancesof2independentnormalpopulations–(SelfStudy).

UNIT–IV NON-PARAMETRICTESTS (15HRS.)

Signtest,Wilcoxonsignedranktest,Mediantest,Mann-WhitneyUtest,Runstest-testforrandomness.

UNIT–V SEQUENTIALPROBABILITYRATIOTEST (15HRS.)

Sequential Probability Ratio Test – Definition and properties of SPRT(withoutproof),simpleproblembasedonOCandASNforBinomial,Bernoulli,Poisson&Normaldistributions.

TEXT:

1. S.CGuptaandV.K.Kapoor,*FundamentalsofMathematicalStatistics*,Sultan Chand &SonsPvt.Ltd.NewDelhi(2002).
2. S.P.Gupta,*FundamentalsofStatistics*,SultanChand&SonsPvt.Ltd.NewDelhi.

REFERENCES:

1. A.M.Mood,F.A.GraybillandD.C.Boes,*IntroductiontothetheoryofStatistics*, McGrawHill(1974).
2. R.V.HoggandA.T.Craig,*Introductiontomathematicalstatistics*,3rdedition(1972).
3. A.M.Goon,M.K.GuptaandB.DasGupta, *An outline of statisticaltheory*, VolumeI, 6threvised edition World Press ltd,Calcutta(1980)
4. P.G.Hod,*Introductiontomathematicalstatistics*,Asiapublishinghouse(1971).
5. V.K.Rohatgi,*AnintroductiontoprobabilitytheoryandMathematicalStatistics*, WileyEastern(1984).
6. MarekFisz,*ProbabilitytheoryandMathematicalStatistics*,JohnWiley(1961).
7. M.R.Spiegal, *Theory and problems of probability and statistics*,Schaum'soutlineseries,McGrawHill(1982).
8. G.W.SnedecorandW.G.Cochran,*Statisticalmethods*,6thedition(1967):

COURSECONTENTS&LECTURESCHEDULE:

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
UNIT-1TESTINGOFHYPOTHESIS				
1.1	StatisticalHypothesis	2	Lecture	PPT& White board
1.2	Simpleandcompositehypothesis, Null and alternativeHypothesis	2	Chalk &Talk	BlackBoard
1.3	Twotypesoferrors	2	Lecture	PPT& White board
1.4	statisticaltest,sizeofatest,levelofsignificance,criticalregion	3	Lecture	PPT& White board
1.5	Mostpowerfultest	1	Chalk &Talk	BlackBoard
1.6	Neymann-Pearsonlemma	1	Chalk &Talk	BlackBoard
1.7	SimpleproblemsbasedonBinomial,Poisson,Uniform,Normal&exponentialdistributions.	4	Chalk &Talk	BlackBoard
UNIT-2UNIFORMLYMOSTPOWERFULTESTS				
2.1	Powerfunctionandpowercurve	2	Lecture	Green Board Charts
2.2	oneparameter exponentialfamily,Monotonelikelihoodratioproperty	4	Chalk &Talk	BlackBoard

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
2.3	Best critical region	2	Chalk &Talk	BlackBoard
2.4	SimpleproblemsbasedonBCR	3	Chalk &Talk	BlackBoard
2.5	UMPtestsfortheparametersofunivariateNormalandExponential distributions.	4	Chalk &Talk	BlackBoard
UNIT3LIKELIHOODRATIOTEST(LRT)				
3.1	DefinitionofLRT	1	Chalk &Talk	BlackBoard
3.2	Parameterspace-PropertiesofLRTtests	2	Chalk &Talk	BlackBoard
3.3	TheorembasedonLRT	1	Chalk &Talk	BlackBoard
3.4	Test forthemean ofnormalpopulation-Testforthevarianceofnormalpopulation	4	Chalk &Talk	BlackBoard
3.5	Testforequalityofmeansof2independentnormalpopulations	4	Discussion	BlackBoard
3.6	Testforequalityofvariancesof2independentnormalpopulations	3	Discussion	BlackBoard
UNIT4NON-PARAMETRICTESTS				
4.1	Signtest,Wilcoxonsignedranktest	5	Chalk &Talk	BlackBoard
4.2	Mediantest,Mann-WhitneyUtest	5	Chalk &Talk	BlackBoard
4.3	Runstest-testforrandomness	5	Chalk &Talk	BlackBoard
UNIT5SEQUENTIALPROBABILITYRATIOTEST				

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
5.1	SequentialProbabilityRatioTest	5	Chalk &Talk	BlackBoard
5.2	DefinitionandpropertiesofSPRT	5	Chalk &Talk	BlackBoard
5.3	SimpleproblembasedonOCandASNforBinomial,Bernoulli,Poisson &Normal distributions.	5	Chalk &Talk	BlackBoard

	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%

NonScholastic	-	-	-	-	-		5	5	12.5%
Total	10	10	5	5	5	35	5	40	100%

CIA	
Scholastic	35
NonScholastic	5
	40

- ✓ **ThelevelsofCIAAssessmentbasedonRevisedBloom'sTaxonomyare:**

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

EVALUATIONPATTERN

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

COURSEOUTCOMES

Onthesuccessfulcompletionofthecourse,studentswillbeableto:

NO.	COURSEOUTCOMES	KNOWLEDGE LEVEL(ACCORDINGTOREVISEDBLOOM'STAXONOMY)	PSOsADDRESSED
CO1	Describetheprocessofhypothesistestingandgivenastatementofaresearchquestion,constructanappropriatenullandalternativehypothesistouseforhypothesistesting.	K1&K3	PSO1&PSO2
CO2	Explain best critical region and carryout UMPtestforthe parameters ofunivariatenormalandexponentialdi	K2	PSO5

	stribution.		
CO3	ExplainLRTanditspropertiesandtest meanandvarianceofnormalpopulatio n	K3&K4	PSO5 &PSO 6
CO4	Analyse the basic properties of nonparametricstatisticaltechniques Illustrate the significance level as theprobabilityofrejectingatruenullhy pothesis	K1,K2&K3	PSO5 &PSO 6
CO5	IllustrateSequentialprobabilityratiotest	K2&K4	PSO5 &PSO 6

MappingofC0swithPSOs

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	2	2	3	3
CO4	2	2	2	2	3	3
CO5	2	2	2	2	3	3

MappingofC0swithPOs

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

Note: ♦StronglyCorrelated–**3** ♦ModeratelyCorrelated–**2**

♦ WeaklyCorrelated-**1**

COURSEDESIGNER:

1. **Dr.P.Vetriselvi**
2. **Ms.D.K.PonOvyaFo**

rwardedBy

Dr.E.Helena

IIIB.Sc.STATISTICS

SEMESTER V

Forthosewhojoinedin2019onwards

Skill Development-100%

PROGRAMME CODE	COURSE CODE	COURSETITLE	CATEGORY	HRS/WEEK	CREDITS
USST	19ST5CC10	Design of Experiments	Lecture	5	4

COURSEDESCRIPTION

Thiscourseisintroducedtothe students to understand thefundamentalprinciplesofexperimentaldesigns.

COURSEOBJECTIVES

Toenablethestudentsunderstandthefundamentalsofexperimentaldesigns, analysistoolsandtechniques,interpretationandapplications.

UNIT–I FUNDAMENTALPRINCIPLESOFEXPERIMENTS (15HRS.)

Terminology in Experimental statistics – Principles of experimentaldesign-Replication,RandomizationandLocalControlTechniques

UNIT–II LINEARMODELANDITSCLASSIFICATIONSI (15HRS.)

Completely Randomized Design (CRD) and its analysis- **RandomizedBlock Design (RBD) – (**Self Study)and its analysis - **Latin Square Design(LSD)–(**SelfStudy)anditsanalysis.

UNIT–III ANALYSISOFVARIANCE (15HRS.)

Definition–Assumption–Onewayclassification– Two wayclassification(oneobservationpercell)- Twowayclassificationwithmobservationpercell

UNIT–IV LINEARMODELANDITSCLASSIFICATIONSII (15HRS.)

Missingplottechnique–Meaning– Analysisofmissingplotdesign(Fisher‟sRule)– AnalysisofRBDwithonemissingobservation-Analysisof

RBDwithtwomissingobservation-AnalysisofLSDwithonemissingobservation

UNIT–V FACTORIALEXPERIMENTS (15HRS.)

Advantages of factorial experiment – Definition 2^2, $2^3$and 2^nfactorialexperimentsandtheiranalysis–Confounding-PartialandCompleteconfounding in 2^3- Split plot design and its analysis, BlBD- definition andparameters.

TEXT:

1.S.C.GuptaandV.K.Kapoor,*FundamentalsofAppliedStatistics*,SultanChand&Sons(2007).

REFERENCES:

1. D.Montgomery,*DesignofExperiments*,JohnWileyandSon(2009).
2. M.N.DassandN.C.Gin,*DesignandAnalysisofExperiments*,WileyEastern, NewDelhi(1986)
3. Kempthorne,*DesignandAnalysisofExperiments*,JohnWiley.NewYork(1956).

COURSECONTENTS&LECTURESCHEDULE:

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
UNIT-1FUNDAMENTALPRINCIPLESOFEXPERIMENTS				
1.1	Terminologyinexperimentalstatistics	3	Lecture	PPT& White board
1.2	Principlesofexperimentaldesign	6	Chalk &Talk	BlackBoard
1.3	Replication, Randomization andLocalControlTechniques	6	Chalk &Talk	BlackBoard
UNIT-2ANALYSISOFVARIANCE				
2.1	Definition – Assumption – Onewayclassification	3	Chalk &Talk	BlackBoard
2.2	Twowayclassification(oneobservationpercell)	6	Chalk &Talk	BlackBoard
2.3	Twowayclassificationwithmobservationpercell	6	Chalk &Talk	BlackBoard
UNIT-3LINEARMODELANDITSCLASSIFICATIONSI				
3.1	CompletelyRandomizedDesign(CRD)anditsanalysis	5	Chalk &Talk	BlackBoard
3.2	Randomized BlockDesign(RBD)anditsanalysis	5	Discussion	PPT& White board
3.3	LatinSquareDesign(LSD)anditsanalysis.	5	Discussion	PPT& White board
UNIT-4LINEARMODELANDITSCLASSIFICATIONSII				
4.1	Missingplottechnique	2	Chalk &Talk	BlackBoard
4.2	Analysisofmissingplotdesign	3	Chalk&	Black

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
	(Fisher‟sRule)		Talk	Board
4.3	AnalysisofRBDwithonemissingobservation	4	Chalk &Talk	BlackBoard
4.4	AnalysisofRBDwithtwomissingobservation	3	Chalk &Talk	BlackBoard
4.5	AnalysisofLSDwithonemissingobservation	3	Chalk &Talk	BlackBoard
UNIT-5FACTORIALEXPERIMENTS				
5.1	Advantagesoffactorialexperiment	2	Chalk &Talk	BlackBoard
5.2	Definition 2^2, $2^3$and 2^nfactorialexperiments and their analysis –Confounding	5	Chalk &Talk	BlackBoard
5.3	PartialandCompleteconfoundingin2^3	4	Chalk &Talk	BlackBoard
5.4	Splitplotdesignanditsanalysis,BlBD	4	Chalk &Talk	BlackBoard

Levels	C1	C2	C3	C4	C5	TotalScholasticMarks	NonScholasticMarks C6	CIA Total	% ofAssessment
	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%
NonScholastic	-	-	-	-	-		5	5	12.5%
Total	10	10	5	5	5	35	5	40	100%

CIA	
Scholastic	35
NonScholastic	5
	40

- ✓ **ThelevelsofCIAAssessmentbasedonRevisedBloom'sTaxonomyare:**

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

EVALUATIONPATTERN

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

NO.	COURSEOUTCOMES	KNOWLEDGE LEVEL(ACCORDINGTOREVISEDBLOOM'STAXONOMY)	PSOsADDRESSED
CO1	Defineandrecognizetheterminologyofexperimentaldesign.	K1	PSO1&PSO2
CO2	Applyandinterpretthemethodsofanalysisofvariance	K2&K3	PSO4
CO3	AnalyseCRD,RBDANDLSD	K4	PSO3
CO4	Analyse missing plot technique IRBDandLSD	K1,K2&K3	PSO5 &PSO 6
CO5	Designandconducttwolevelfunctionalfactorialdesigns,splitplotdesign	K1,K2&K3	PSO5 &PSO 6

MappingofC0swithPSOs

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

MappingofC0swithPOs

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

Note: ♦StronglyCorrelated–**3** ♦ModeratelyCorrelated–**2**

♦ WeaklyCorrelated-**1**

COURSEDESIGNER:

1. **Dr.P.Vetriselvi**
2. **Ms.D.K.PonOvya**

ForwardedBy

Dr.E.Helena

IIIB.Sc.STATISTICS

SEMESTER V

Forthosewhojoinedin2019onwards

Skill Development-100%

PROGRAMME CODE	COURSE CODE	COURSETITLE	CATEGORY	HRS/WEEK	CREDITS
USST	19ST5CC11	Demography	Lecture	5	4

COURSEDESCRIPTION

Thiscoursebeginsbyfocusingonunderstandingthecoresocialdemographic variables such as fertility, mortality and migration and howthesevariablesinfluencepopulationgrowth,compositionandstructure.

COURSEOBJECTIVES

To enable the students understand how population is examined inrelationtoitssociologicaldeterminantsandconsequence

UNIT–I DEMOGRAPHY (15HRS.)

Demography:Definition–SourcesofDemographicdata-VitalRegistration–PopulationCensus-PopulationRegister-DemographicSurveys-PopulationdataasanaidtoSocial,EconomicandHealthPlanning-SimpleProblems

UNIT–II FERTILITYMEASUREMENTS (15HRS.)

Fertility measurements: Rates and Ratios –Fertility – Factors affectingfertility – Fertility Measures - **Crude Birth Rate (CBR), General, Specificand Total Fertility Rates – (**Self Study) – Growth Rates- Gross and NetReproductionRates(GRR,NRR)-SimpleProblems.

UNIT–III MORTALITYMEARSUREMENTS (15HRS.)

MortalityMeasurements:Mortality–MortalityMeasures- CrudeDeath Rate (CDR), Age, Sex and Cause Specific Death Rates - StandardizedDeathRate-InfantMortalityRate--SimpleProblems

UNIT–IVLIFETABLE (15HRS.)

Life Table: Assumptions, Description of various columns of a Life tableand their relationships - Construction of a Life table - Uses of a Life table -SimpleProblems

UNIT–V MIGRATION (15HRS.)

Migration:Definition-FactorsaffectingMigration-GrossandNetMigrationRates-Projection:PopulationestimatesandProjection–Arithmetic,GeometricandExponentialGrowthRates-BasicideasofStationaryandStablepopulation-SimpleProblems.

TEXT:

1. A.M.Goon,M.K.Gupta.andDasGupta,*FundamentalsofStatistics* Vol.II,worldpress.

2. S.C.GuptaandV.K.Kapoor,*FundamentalsofAppliedStatistics*,S.Chand&Co, 4ththoroughlyrevisededition,New Delhi, Reprint2009

REFERENCES:

1. D.E.Mishra,*Anintroductiontothestudyofpopulation*,SouthIndiapublishers,Madras.
2. M.LJhingan,B.K.BhattandJ.N.Desai,*Demography*,VrindaPublicationsPvt.Ltd,Delhi,2nd RevisedEdition(2003).

COURSECONTENTS&LECTURESCHEDULE:

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
UNIT-1 DEMOGRAPHY				
1.1	SourcesofDemographicdata	3	Lecture	PPT& White board
1.2	VitalRegistration	2	Lecture	PPT& White board
1.3	PopulationCensusandPopulationRegister	3	Lecture	PPT& White board
1.4	DemographicSurveys	2	Lecture	PPT& White board
1.5	Population data as an aid toSocial, Economic and HealthPlanning	2	Lecture	PPT& White board
1.6	SimpleProblems	3	Chalk &Talk	BlackBoard
UNIT-2FERTILITYMEASUREMENTS				
2.1	RatesandRatios–Fertility–Factorsaffectingfertility	4	Chalk &Talk	BlackBoard
2.2	FertilityMeasures-CrudeBirthRate(CBR),General,SpecificandTotalFertilityRates	4	Discussion	PPT& White board
2.3	GrowthRates	3	Chalk &Talk	BlackBoard
2.4	Gross and Net ReproductionRates(GRR,NRR)-SimpleProblems.	4	Chalk &Talk	BlackBoard
UNIT-3MORTALITYMEARSUREMENTS				

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
3.1	MortalityMeasures	5	Chalk &Talk	BlackBoard
3.2	Crude Death Rate (CDR), Age,Sex and Cause Specific DeathRates	5	Chalk &Talk	BlackBoard
3.3	StandardizedDeathRate,InfantMortalityRate,SimpleProblems	5	Chalk &Talk	BlackBoard
UNIT-4LIFETABLE				
4.1	LifeTable:Assumptions,DescriptionofvariouscolumnsofaLifetableandtheirrelationships	4	Chalk &Talk	BlackBoard
4.2	ConstructionofaLifetable	4	Chalk &Talk	BlackBoard
4.3	UsesofaLifetable	2	Chalk &Talk	BlackBoard
4.4	SimpleProblems	5	Chalk &Talk	BlackBoard
UNIT-5 MIGRATION				
5.1	FactorsaffectingMigration	3	Chalk &Talk	BlackBoard
5.2	GrossandNetMigrationRates	3	Chalk &Talk	BlackBoard
5.3	Populationestimatesand Projection	2	Chalk &Talk	BlackBoard
5.4	Arithmetic,Geometricand ExponentialGrowthRates	2	Chalk &Talk	BlackBoard
5.5	BasicideasofStationaryandStablepopulation	2	Chalk &Talk	BlackBoard
5.6	SimpleProblems	3	Chalk &Talk	BlackBoard

Levels	C1	C2	C3	C4	C5	TotalScholasticMarks	NonScholasticMarks C6	CIA Total	% ofAssessment
	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%
NonScholastic	-	-	-	-	-		5	5	12.5%
Total	10	10	5	5	5	35	5	40	100%

CIA	
Scholastic	35
NonScholastic	5
	40

- ✓ **ThelevelsofCIAAssessmentbasedonRevisedBloom'sTaxonomyare:**

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

EVALUATIONPATTERN

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

COURSEOUTCOMES

Onthesuccessfulcompletionofthecourse,studentswillbeableto:

NO.	COURSEOUTCOMES	KNOWLEDGE LEVEL(ACCORDINGTOREVISEDBLOOM'STAXONOMY)	PSOsADDRESSED
CO1	Explainsourcesofdemographicdata.	K1&K2	PSO1&PSO2
CO2	ApplyfertilitymeasurementssuchasCBR,TFR,GRRandNRR	K1,K2&K3	PSO5
CO3	ComputemortalitymeasuresCDR,SDRandinfantmortalityrate	K2&K4	PSO5
CO4	Constructthedemographictable	K1,K2&K3	PSO6
CO5	ExplainthefactorsaffectingmigrationandthebasicideasofStationaryandStablepopulation	K1,K2&K3	PSO6

MappingofC0swithPSOs

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	2	2	3	2
CO4	2	2	2	2	3	2
CO5	2	2	2	2	3	2

MappingofC0swithPOs

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

Note: ♦StronglyCorrelated–**3** ♦ModeratelyCorrelated–**2**

♦ WeaklyCorrelated-**1**

COURSEDESIGNER:

1. **Dr.P.Vetriselvi**
2. **Mrs.K.Bhuvaneswari**

ForwardedBy

Dr.E.Helena

III B.Sc STATISTICS

SEMESTER –V

For those who joined in 2019 onwards

Skill Development-100%

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USST	19ST5CC12	Real Analysis	Lecture	5	4

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 AND REAL SEQUENCE (15 HRS.)

Real valuedfunctions **- equivalence - countability- real numbers–** (Self Study)– least upper bound- definition of sequence and subsequence – limit of a sequence.

UNIT –IICONVERGENT AND DIVERGENT SEQUENCES (20 HRS.)

Convergent sequences –divergent sequences-bounded sequences-monotone sequences- operations on convergent sequences- operations on divergent sequences- Cauchy sequences

UNIT –III SERIES OF REAL NUMBERS (20 HRS.)

Series- convergence and divergence of series – series with non-negative terms – alternating series- conditional convergence and absolute convergence- test for absolute convergence

UNIT –IV LIMITS AND METRIC SPACES (10 HRS.)

Limit of a function on the real line- metric spaces- limit in metric spaces

UNIT –V CONTINUOUS FUNCTIONS (10 HRS.)

Functions continuous on a metric space- functions continuous on the real line

TEXT:

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

REFERENCES:

1. S. Arumugam and A. Thangapandi Issac, *Modern Analysis*
2. Copson, *Metric spaces*, Universal book stall, New Delhi (1989).
3. Walter Rudin, *Mathematical Analysis*, MC-craw hill international, Third edition.

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 REAL VALUED FUNCTIONS AND REAL SEQUENCES				
1.1	Real valued functions	1	Chalk & Talk	Black Board
1.2	Equivalence	1	Discussion	PPT & White board
1.3	Countability, real numbers	2	Discussion	PPT & White board
1.4	Least upper bound	2	Chalk & Talk	Black Board
1.5	Definition of sequence and subsequence	4	Chalk & Talk	Black Board
1.6	Limit of a sequence.	5	Chalk & Talk	Black Board
UNIT -2 CONVERGENT AND DIVERGENT SEQUENCES				
2.1	Convergent sequences	4	Chalk & Talk	Black Board
2.2	Divergent sequences	4	Chalk & Talk	Black Board

2.3	Bounded sequences-monotone sequences	4	Chalk & Talk	Black Board
2.4	Operations on convergent sequences	3	Chalk & Talk	Black Board
2.5	Operations on divergent sequences	3	Chalk & Talk	Black Board
2.6	Cauchy sequences.	2	Chalk & Talk	Black Board
UNIT -3 SERIES OF REAL NUMBERS				
3.1	Convergence and divergence of series	4	Chalk & Talk	Black Board
3.2	Series with non-negative terms	4	Chalk & Talk	Black Board
3.3	Alternating series	4	Chalk & Talk	Black Board
3.4	Conditional convergence and absolute convergence	4	Chalk & Talk	Black Board
3.5	Test for absolute convergence	4	Chalk & Talk	Black Board
UNIT -4 LIMITS AND METRIC SPACES				
4.1	Limit if a function on the real line- metric spaces	5	Chalk & Talk	Black Board
4.2	Limit in metric spaces	5	Chalk & Talk	Black Board
UNIT -5 CONTINUOUS FUNCTIONS				
5.1	Functions continuous on a metric space	5	Chalk & Talk	Black Board
5.2	Functions continuous on the real line.	5	Chalk & Talk	Black Board

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total
	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
K2	2	2	5	-	-	9	-	9
K3	3	3	-	-	5	11	-	11
K4	3	3	-	5	-	11	-	11
Non Scholastic	-	-	-	-	-		5	5
Total	10	10	5	5	5	35	5	40

CIA	
holastic	5
n Scholastic	5
	0

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

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

EVALUATION PATTERN

	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 ADDRESSE
CO 1	Describe fundamental ideas and theorems on sequences.	K1	PSO1& PSC
CO 2	Distinguish convergent and divergent sequences	K2 & K4	PSO2
CO 3	Distinguish convergent and divergent series	K3 & K4	PSO3
CO 4	Explain the concept of limits and metric space and their roles in the real line	K1, K2 & K3	PSO3
CO 5	Organize theorems in a correct mathematical way	K2 & K4	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**

COURSE DESIGNER:

1. **Mrs. J. Annaal Mercy**
2. **Dr. K. Mano**

Forwarded By

Dr. E. Helena

IIIB.Sc.STATISTICS

SEMESTER V

Forthosewhojoinedin2019onwards

Employability-100%

PROGRAMME CODE	COURSE CODE	COURSETITLE	CATEGORY	HRS/WEEK	CREDITS
USST	19ST5ME1	Computer Programming in C	Lecture	3	3

COURSEDESCRIPTION

Thiscourseprovidesskillsindesigningandwritingsimpleprograms in C.

COURSEOBJECTIVES

Toenablethestudentstolearnthebasicconceptsofdatainput,output,operators,expressions,controlstatements,arrays,handlingofstringsanduser–definedfunctions.towriteCprograms,

UNIT–I CFUNDAMENTALS,OPERATORSANDEXPRESSION (9 HRS.)

Character Set – C Tokens – Keywords and Identifiers – Constants – Variables–Datatypes–DeclarationofVariables–AssigningValuestoVariables–DefiningSymbolicConstants–Operators&Expressions:Introduction – **Arithmetic ofoperators – Relational operators – Logicaloperators–Assignmentoperators–Incrementanddecrementoperators –Conditionaloperator–Bitwiseoperators–Specialoperators–(**SelfStudy) – Arithmetic expressions – Evaluation of expressions – Precedence ofarithmetic operators – Some computational problems – Type conversions inexpressions–Operatorprecedence and associativity – Mathematicalfunctions.

UNIT–II DATAINPUT,OUTPUT&CONTROLSTATEMENTS (9HRS.)

Readingacharacter–Writingacharacter–Formattedinput – Formattedoutput-DecisionMakingandBranching: IF Statement – the IF ELSEstatement – Nesting of IF..ELSE statements – The ELSE IF ladder – The

switch statement - The ?: Operator – the GOTO statement – Decision MakingandLooping:TheWHILEstatement–theDOstatement – the FORstatement–Jumpsinloops

UNIT–III ARRAYS (9HRS.)

OneDimensionalArray–TwoDimensionalArrays–InitializingTwoDimensionalArrays

UNIT–IV HANDLINGOFSTRINGS (9HRS.)

HandlingofCharacterStrings: Declaring and Initializing StringVariables–ReadingStringfromTerminal–WritingStringstoScreen–Arithmetic Operations on Characters – Putting Strings together –ComparisonoftwoStrings–StringHandlingFunctions–TableofStrings

UNIT–V USER–DEFINEDFUNCTIONS (9HRS.)

NeedforUser-DefinedFunctions–AMulti-functionProgram–FormofCFunctions–ReturnValuesandtheirTypes– Calling a Function – Category of Functions – No Arguments and No Return Values – Argumentsbut No Return Values – Arguments with Return Values – Handling of Non-IntegerFunctions–NestingofFunctions–Recursion–Functions withArrays-thescopeandlifetimeofvariablesinfunctions.

TEXT:

E.Balagurusamy-ProgramminginANSIC-TataMcGraw-HillPublishingCompanyLtd.– SixthEdition-2014

UNITI&II: Chapters: 2,3,4,5,6 **UNITIII** :Chapter: 7:Section 7.1 –7.6 **UNITIV** : Chapter8 **UNITV** :Chapter: 9

REFERENCES:

1. Byron S. Gotfried - Theory and problems of programming with C(SchaumsSeries)Tata–McGrawHillsEdition-1991.

2. Kernighan&Brian.W-TheCprogramminglanguage,Prentice–HallofIndia,PrivateLimited,NewDelhi-1999.

COURSECONTENTS&LECTURESCHEDULE:

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
UNIT-1CFUNDAMENTALS,OPERATORSANDEXPRESSION				
1.1	CharacterSet–CTokens–KeywordsandIdentifiers	1	Lecture	PPT& White board
1.2	Constants–Variables–Datatypes–DeclarationofVariables–AssigningValuestoVariables	1	Chalk &Talk	BlackBoard
1.3	DefiningSymbolicConstants–Operators&Expressions	1	Lecture	PPT& White board
1.4	Arithmetic ofoperators–Relationaloperators–Logicaloperators–Assignmentoperators	2	Discussion	PPT& White board
1.5	Incrementanddecrementoperators–Conditionaloperator–Bitwiseoperators–Specialoperators	1	Discussion	PPT& White board
1.6	Typeconversionsinexpressions	1	Chalk &Talk	BlackBoard
1.7	Operatorprecedenceandassociativity–Mathematicalfunctions.	2	Lecture	PPT& White board
UNIT-2DATAINPUT,OUTPUT&CONTROLSTATEMENTS				
2.1	Readingacharacter–Writingacharacter–Formattedinput–Formattedoutput-DecisionMakingandBranching	2	Chalk &Talk	BlackBoard
2.2	IFStatement–theIFELSEstatement–NestingofIF..ELSEstatements–TheELSEIFladder	2	Chalk &Talk	BlackBoard

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
2.3	DecisionMakingandLooping:TheWHILEstatement	3	Chalk &Talk	BlackBoard
2.4	theDOstatement– theFORstatement– Jumpsinloops	2	Chalk &Talk	BlackBoard
UNIT-3ARRAYS				
3.1	OneDimensionalArray	3	Chalk &Talk	BlackBoard
3.2	TwoDimensionalArrays	3	Chalk &Talk	BlackBoard
3.3	InitializingTwoDimensionalArrays	3	Chalk &Talk	BlackBoard
UNIT–4HANDLINGOFSTRINGS				
4.1	Declaring and Initializing StringVariables – Reading String fromTerminal	3	Chalk &Talk	BlackBoard
4.2	WritingStringstoScreen– ArithmeticOperationsonCharacters	2	Chalk &Talk	BlackBoard
4.3	PuttingStringstogether	1	Chalk &Talk	BlackBoard
4.4	Comparison oftwo Strings – StringHandlingFunctions	2	Chalk &Talk	BlackBoard
4.5	TableofStrings	1	Chalk &Talk	BlackBoard
UNIT-5USER–DEFINEDFUNCTIONS				
5.1	AMulti-functionProgram	1	Lecture	PPT& White board
5.2	FormofCFunctions	1	Lecture	PPT& White

ModuleNo.	Topic	No.ofLectures	TeachingPedagogy	TeachingAids
				board
5.3	ReturnValuesandtheirTypes	2	Chalk &Talk	BlackBoard
5.4	CategoryofFunctions	2	Lecture	PPT&Whitebo ard
5.5	HandlingofNon-IntegerFunctions–NestingofFunctions–	2	Chalk &Talk	BlackBoard
5.6	Functions with Arrays-thescopeandlifetimeofvariablesinfunctions.	1	Lecture	PPT&Whitebo ard

Levels	C1	C2	C3	C4	C5	TotalScholasticMarks	NonScholasticMarks C6	CIA Total	% ofAssessment
	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%
NonScholastic	-	-	-	-	-		5	5	12.5%
Total	10	10	5	5	5	35	5	40	100%

CIA	
Scholastic	35

NonScholastic	**5**
	40

- ✓ **ThelevelsofCIAAssessmentbasedonRevisedBloom'sTaxonomyare:**

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

EVALUATIONPATTERN

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

COURSEOUTCOMES

Onthesuccessfulcompletionofthecourse,studentswillbeableto:

NO.	COURSEOUTCOMES	KNOWLEDGE LEVEL(ACCORDINGTOREVISEDBLOOM'STAXONOMY)	PSOsADDRESSED
CO1	Explain various data types andoperatorsinC	K1&K2	PSO1
CO2	Summarize Decision MakingBranching,loopingstatementsandarrays	K1,K2&K4	PSO3 &PSO4
CO3	Categorize function, pointers andstructures	K2,K3&K4	PSO4 &PSO5
CO4	DescribeStringsandStringHandlingFunctions	K1,K2&K3	PSO4
CO5	Create C program for real lifeproblems	K2&K4	PSO4 &PSO6

MappingofC0swithPSOs

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

MappingofC0swithPOs

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

Note: ♦StronglyCorrelated–**3** ♦ModeratelyCorrelated–**2**

♦ WeaklyCorrelated-**1**

COURSEDESIGNER:

1. **Dr.E.Helena**
2. **Mrs.B.VethamaryJacquline**

ForwardedBy

Dr.E.Helena

IIIB.Sc.STATISTICS

SEMESTER V

Forthosewhojoinedin2019onwards

PROGRAMME CODE	COURSE CODE	COURSETITLE	CATEGORY	HRS/WEEK	CREDITS
USST	19ST5ME2	C Practicals	Practical	2	2

1. Tofindtheareaofasquare
2. Tofindtheareaofacircle
3. Tofindtheareaofatriangle
4. TofindSimpleinterest
5. SolvingQuadraticequations
6. Checkingprimes
7. Arrangingnumbersinascendingorder
8. Reversingdigitsofanumber
9. Findingthevaluesofncr,npr.
10. Palindrome
11. Matrixaddition
12. Matrixmultiplication
13. Transposeofamatrix
14. Traceofamatrix
15. Alphabetizingnames
16. MeanandStandarddeviation
17. TofindCorrelationCoefficient
18. Straightlinefittingbythemethodofleastsquares
19. ToprintnthFibonaccinumber
20. Toreadaseriesofwordsformaterminal

III B.Sc STATISTICS

SEMESTER –V

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDIT
USST	22ST5ME3	Object Oriented Programming with C++	Lecture	3	3

COURSE DESCRIPTION

This course introduces the student to object-oriented programming through a study of the concepts of program specification and design, algorithm development.

COURSE OBJECTIVES

In the expanding field of computer education, one of the fastest growing, versatile and much sought after languages is C++. This course enables the students to understand the fundamentals of the language, the concepts related to the syntax of the language.

UNIT –I BEGINNING WITH C++, TOKENS, EXPRESSIONS AND CONTROL STRUCTURES, FUNCTIONS IN C++ (9 HRS.)

What is C++ - Applications of C++ - A simple C++ program – More C++ statements – Structure of C++ program – **Tokens – Keywords – Identifiers – Variables** – Operators – Manipulators – Expressions – **Control structures.** Introduction – The main function – **Function prototyping** – Call by reference – Return by reference – Return by reference – Inline function – Default arguments – Const arguments – Function overloading – Friend and virtual functions – Math library functions.

UNIT –II CLASSES AND OBJECTS (9 HRS.)

Introduction – C structures revisited – Specifying a class – Defining member functions – A C++ program with class – Making an outside function inline – Nesting of member functions – Private member functions – Arrays within a class – Memory allocation for objects – Static data members – Static member functions – Arrays of objects – Objects as function arguments – Friendly functions – Returning objects – Const member functions – Pointers to members – Local

classes.

UNIT – III CONSTRUCTORS, DESTRUCTORS AND OPERATOR OVERLOADING (9 HRS.)

Introduction – Constructors and destructors - Defining operator overloading – Overloading unary operators - Overloading binary operators - Overloading binary operators using friends – Manipulation of strings using operators – Rules for overloading operators – Type conversions.

UNIT – IV INHERITANCE (9 HRS.)

Introduction – Defining derived classes – Single inheritance – Making a private member inheritable – Multilevel inheritance – Multiple inheritance – Hierarchical inheritance – Hybrid inheritance – Virtual base classes – Abstract classes – Constructors in derived classes – Member classes: Nesting of classes.

UNIT –V POINTERS, VIRTUAL FUNCTIONS AND POLYMORPHISM

(9 HRS.)

Introduction – Pointers – Pointers to objects –this pointer – Pointers to derived classes – Virtual functions – Pure virtual functions – Polymorphism.

TEXT BOOK:

1. E. Balagurusamy - *Object Oriented Programming with C++*, Tata McGraw-Hill Publishing Company Limited – Fourth Edition - 2007.
   UNIT I : Chapter 2- 2.1 to 2.4, 2.6, Chapter 3- 3.2 to 3.24
   Chapters 4- 4.1 to 4.11
   UNIT II : Chapter 5- 5.1 to 5.19,
   UNIT III: Chapter 6-6.1 to 6.11 Chapter 7- 7.1 to 7.8,
   UNIT IV: Chapter 8-8.1 to 8.12
   UNIT V : Chapter 9- 9.1 to 9.7

REFERENCES:

1. Robert Lafore – Object-Oriented Programming in Microsoft C++ - Galgotia publication – Third Edition – 2004.
2. Stephen Prata - *C++* primer plus - Galgotia publication pvt. Ltd. – 1997.

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 BEGINNING WITH C++, TOKENS, EXPRESSIONS AND CONTROL STRUCTURES, FUNCTIONS IN C++				
1.1	What is C++, Applications of C++, A simple C++ program, More C++ statements, Structure of C++ program and example programs.	2	Chalk & Talk	Black Board
1.2	Tokens, Keywords, Identifiers, Variables, Operators, Manipulators Expressions, Control structures. (self study)	1	Discussion	Black Board
1.3	Introduction, The main function, Function prototyping (self study) Call by reference, Return by reference	4	Chalk & Talk	Black Board
1.4	Inline function, Default arguments, Const arguments and example programs.	1	Chalk & Talk	Black Board
1.5	Function overloading, Friend and virtual functions, library functions and example programs.	1	Chalk & Talk	Black Board
UNIT -2 CLASSES AND OBJECTS				
2.1	Introduction, C structures revisited , Specifying a class, Defining member functions	1	Chalk & Talk	Black Board
2.2	A C++ program with class , Making an outside function inline ,Nesting of member functions , Private member functions, programs	1	Chalk & Talk	Black Board
2.3	Arrays within a class, Memory allocation for objects, Static data members, Static member	3	Chalk & Talk	Black Board

	functions, programs.			
2.4	Arrays of objects, Objects as function arguments, Friendly functions , Returning objects, programs.	2	Chalk & Talk	Black Board
2.4	Const member functions , Pointers to members , Local classes, programs.	2	Chalk & Talk	Black Board
UNIT -3 CONSTRUCTORS, DESTRUCTORS AND OPERATOR OVERLOADING				
3.1	Introduction, Constructors and destructors, programs.	1	Chalk & Talk	Black Board
3.2	Defining operator overloading , Overloading unary operators , Overloading binary operators , Overloading binary operators using friends, programs	2	Chalk & Talk	Black Board
3.3	Manipulation of strings using operators , Rules for overloading operators, programs	4	Chalk & Talk	Black Board
3.4	Type conversions, programs	2	Chalk & Talk	Black Board
UNIT -4 INHERITANCE				
4.1	Introduction , Defining derived classes and programs.	1	Chalk & Talk	Black Board
4.2	Single inheritance , Making a private member inheritable , Multilevel inheritance and programs	4	Chalk & Talk	Black Board
4.3	Multiple inheritance , Hierarchical inheritance , Hybrid inheritance and programs	2	Chalk & Talk	Black Board
4.4	Virtual base classes , Abstract classes, Constructors in derived classes, Member classes: Nesting of classes and programs.	2	Chalk & Talk	Black Board
UNIT -5 POINTERS, VIRTUAL FUNCTIONS AND POLYMORPHISM				
5.1	Introduction , Pointers ,	2	Chalk	Black

	Pointers to objects and programs.		&Talk	Board
5.2	this pointer , Pointers to derived classes and programs.	3	Chalk & Talk	Black Board
5.3	Virtual functions , Pure virtual functions and programs.	2	Chalk & Talk	Black Board
5.4	Polymorphism and programs.	2	Chalk & Talk	Black Board

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total
	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
K2	2	2	5	-	-	9	-	9
K3	3	3	-	-	5	11	-	11
K4	3	3	-	5	-	11	-	11
Non Scholastic	-	-	-	-	-		5	5
Total	10	10	5	5	5	35	5	40

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

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

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

EVALUATION PATTERN

	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	Define the features of C++ supporting object oriented programming	K1	PSO1
CO 2	Describe classes and objects	K1, K2	PSO2
CO 3	Distinguish Constructors and Destructors and Explain overloading concepts	K1 & K3	PSO4
CO 4	Classify Inheritance in C++	K1, K2, K3	PSO4
CO 5	Design C++ programs for real life situations	K2 & K4	PSO5

Mapping COs Consistency with PSOs

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

Mapping COs Consistency with POs

CO/ PO	PO1	PO2	PO3	PO4
CO1	3	2	2	2
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

IIIB.Sc.STATISTICS

SEMESTER V

Forthosewhojoinedin2021onwards

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

1. Tofindtheareaofasquare
2. Tofindtheareaofacircle
3. Tofindtheareaofatriangle
4. TofindSimpleinterest
5. SolvingQuadraticequations
6. Checkingprimes
7. Arrangingnumbersinascendingorder
8. Reversingdigitsofanumber
9. Findingthevaluesofncr,npr.
10. Palindrome
11. Matrixaddition
12. Matrixmultiplication
13. Transposeofamatrix
14. Traceofamatrix
15. Alphabetizingnames
16. MeanandStandarddeviation
17. TofindCorrelationCoefficient
18. Straightlinefittingbythemethodofleastsquares
19. ToprintnthFibonaccinumber
20. Toreadaseriesofwordsformaterminal

IIIB.Sc.STATISTICSS

EMESTER V

Forthosewhojoinedin2019onwards

Employability-100%

PROGRAMME CODE	COURSE CODE	COURSETITLE	CATEGORY	HRS/WEEK	CREDITS
USST	19ST5SB3	Practical Statistics III	Practical	2	2

COURSEDESCRIPTION

Thecourseprovidesanapplicationbasedon MLEs,analysisoftimeseries,indexnumbersandvitalstatistics&curefitting.

COURSEOBJECTIVES

Toexposethestudentstotheanalysisofstatisticaltechniquesinreallifesituations.

1. Confidenceintervalforproportionsmeansandvariancesbasedon Normaldistribution.
2. Confidenceintervalsformeans,variances,correlationcoefficient
3. ProblemsbasedonMLEs.
4. Fittingofastraight line,seconddegreeandParabola,exponential
5. AnalysisofTimeSeries
6. IndexNumbers-Chainindexnumbers-consumerpriceindexnumbers
7. InterpolationandExtrapolation
8. VitalStatistics

Levels	C1	C2	C3	C4	C5	TotalScholasticMarks	NonScholasticMarks C6	CIA Total	% ofAssessment
	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%
NonScholastic	-	-	-	-	-		5	5	12.5%
Total	10	10	5	5	5	35	5	40	100%

CIA	
Scholastic	35
NonScholastic	5
	40

- ✓ **ThelevelsofCIAAssessmentbasedonRevisedBloom'sTaxonomyare:**

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

EVALUATIONPATTERN

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

COURSEOUTCOMES

Onthesuccessfulcompletionofthecourse,studentswillbeableto:

NO.	COURSEOUTCOMES	KNOWLEDGE LEVEL(ACCORDINGTOREVISEDBLOOM'STAXONOMY)	PSOsADDRESSED
CO1	Analyzetheproblemsbasedonconfidenceintervalforproportions,mean,variancesandcorrelationcoefficient.	K1&K4	PSO1 &PSO 2
CO2	Applyandinterpretthemethodsofcurvefitting,timeseries	K2&K3	PSO5 &PSO 6
CO3	Analyzetheproblembasedonvitalstatistics	K2&K3	PSO5 &PSO 6

MappingofC0swithPSOs

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

MappingofC0swithPOs

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

Note: ♦StronglyCorrelated–**3** ♦ModeratelyCorrelated–**2**

♦ WeaklyCorrelated-**1**

COURSEDESIGNER:

1. **Dr.P.Vetriselvi**
2. **Mrs.K.BhuvaneswariF**

orwardedBy

Dr.E.Helena

IIIB.Sc.STATISTICSS

EMESTER V

Forthosewhojoinedin2019onwards

Employability-100%

PROGRAMME CODE	COURSE CODE	COURSET ITLE	CATEGORY	HRS/WEEK	CREDITS
USST	19ST5SB4	Statistical software – SPSS	Practical	2	2

COURSEDESCRIPTION

Thecourseisintroducedtolearnaprogramminglanguagewhichhelpstohandleallaspectsofdataanalysisusingstatisticalsoftware SPSS.

COURSEOBJECTIVES

Toexposethestudentsontheapplicationsofstatisticalanalysisusing SPSS

1. DiagrammaticRepresentationBarChart,PieDiagram
2. ConstructionofDiscreteandContinuousFrequencyTablesfromrawdata
3. GraphicalRepresentation-Histogram,Box-Whiskersplot
4. DescriptiveStatistics
5. Simplecorrelation,Rankcorrelation,
6. RegressionFittingofPoissondistribution
7. FittingofNormaldistribution
8. Parametrictests–Means,VariancesandProportions
9. Chi–squaretestforgoodnessoffit
10. Chi–squaretestforindependencesamples
11. Non-ParametrictestsSigntest,Wilcoxontest,Mann-WhitneyUtest,Mediantest,Runtest,KolmogorovSmirnovonesampletest,KruskalWallis
12. ANOVA–onewayandtwoway
13. DesignofExperiment–CRD,RBD,LSD
14. FactorialExperiment-experimentswithtotalandpartialconfounding.

$2^2\,2^3$

Levels	C1	C2	C3	C4	C5	TotalScholasticMarks	NonScholasticMarks C6	CIA Total	% ofAssessment
	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%
NonScholastic	-	-	-	-	-		5	5	12.5%
Total	10	10	5	5	5	35	5	40	100%

CIA	
Scholastic	35
NonScholastic	5
	40

- ✓ **ThelevelsofCIAAssessmentbasedonRevisedBloom'sTaxonomyare:**

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

EVALUATIONPATTERN

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

COURSEOUTCOMES

Onthesuccessfulcompletionofthecourse,studentswillbeableto:

NO.	COURSEOUTCOMES	KNOWLEDGELEVEL(ACCORDINGTOREVISEDBLOOM'STAXONOMY)	PSOsADDRESSED
CO1	UnderstandhowtostartSPSSandrecode variablesandpreparedataforanalysis	K1&K4	PSO1 &PSO2
CO2	Conductdescriptiveandbasicinferentialstatistics	K2&K3	PSO3 &PSO4
CO3	Carryoutstatisticalanalysisthatcantesthypothesisandanalyzefactorialexperiments.	K2&K3	PSO5 &PSO6

MappingofC0swithPSOs

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

MappingofC0swithPOs

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

Note: ♦StronglyCorrelated–**3** ♦ModeratelyCorrelated–**2**

♦ WeaklyCorrelated-**1**

COURSEDESIGNER:

1. **Mrs.K.Bhuvaneswari**
2. **Ms.K.SaranyaF**

orwardedBy

Dr.E.Helena

IIIB.Sc.STATISTICSS

EMESTER VI

Forthosewhojoinedin2019onwards

Skill Development-100%

PROGRAMME CODE	COURSE CODE	COURSET ITLE	CATEGORY	HRS/WEEK	CREDITS
USST	19ST6CC13	Statistical QualityC ontrol	Lecture	5	4

COURSEDESCRIPTION

Thiscourseisdesignedto introduce students to statistical qualitycontrolemphasizingthoseaspectswhicharerelevantforSQC‟spracticalimplementation

COURSEOBJECTIVES

.

TointroducethestudentsthebasicsofStatisticalQualityControlandtoenablethemdescribequalitycharacteristicsandrelationships

UNIT–1 STATISTICALQUALITYCONTROL (15HRS.)

Basis of Statistical Quality Control - Definition – Benefits – ProcesscontrolandProductcontrol-ControlLimits,SpecificationLimitsandtolerance Limits – Control Charts – Control Limits – **Tools for StatisticalQualityControl–(**Self Study)-application of theory of runs in qualitycontrol.

UNIT–II CONTROLCHARTFORVARIABLES (15HRS.)

Control chart for variables – The General theory of Control Chart – **DefinitionofControlChart–LearningOutcomesoftheControlCharts –(**SelfStudy)-$\bar{X}$andRCharts–Controllimitsfor$\bar{X}$Chart–Controllimitsfor R Chart - Interpretation of control charts X and R. - chart – Basisσ ofsubgrouping-plottingXandRresults-determiningthetrialcontrollimits

UNIT–III CONTROLCHARTFORATTRIBUTES (15HRS.)

Controlchartforattributes–Controlchartforfraction defective (p-chart) – Control chart for number of defectives (d-chart) – Interpretation of pchart – Control chart for number of defects per unit (c-chart) – c- charts forvariablesamplesize–Applicationsofc-chart

UNIT–IVSAMPLINGPLANS (15HRS.)

Acceptanceofsamplingplansforattributes-
Producer'sriskandconsumer's risk - concepts of AQL, LTPD, AOQ, AOQL, ATI and ASN – singleand double sampling plans - OC, AOQ, ATI curves for single - OC, ASN, ATIcurves for Double sampling plans. – Single sampling vs Double samplingplans–Sequentialsamplingplan.

UNIT–V RELIABILITY (15HRS.)

Reliability: Definition of reliability – Basic elements of reliability – Bathtubcurve-Achievementofreliability–Designing for reliability – measurementanofreliability– cost of reliability - maintenance andreliability– MTBF––MTTR–Hazardanalysis–MTTF–qualityandreliability
– Reliabilityofseries,parallelandmixedsystems.

TEXTBOOKS:

1. V.K.Kapoor,andS.P.Gupta,*Fundamentalsofappliedstatistics*,Sultan Chandandsons(1978).
2. M.Mahajan,StatisticalQualityControl(2005).

REFERENCEBOOKS:

1. E.L.Grant,andR.S.LavenWorth,*StatisticalQualityControl*,McGrawHill .
2. R.C.Gupta,*StatisticalQualityControl*(1974).
3. D.C.Montgomery,*IntroductiontoStatisticalQualityControl*,JohnWa ley&Sons(1983).
4. S.K.Ekambaram,*Statistical basis ofAcceptance sampling*,AsiaPublishingHouse(1963).

COURSECONTENTS&LECTURESCHEDULE:

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
UNIT-1STATISTICALQUALITYCONTROL				
1.1	BasisofStatisticalQualityControl	2	Lecture	PPT& White board
1.2	ProcesscontrolandProductcontrol	3	Lecture	PPT& White board
1.3	ControlLimits,SpecificationLimitsandtoleranceLimits	3	Lecture	PPT& White board
1.4	ControlCharts–ControlLimits	3	Chalk &Talk	BlackBoard
1.5	Toolsfor StatisticalQualityControl	2	Discussion	PPT& White board
1.6	Applicationoftheoryofrunsinquality	2	Chalk &Talk	BlackBoard
UNIT-2CONTROLCHARTFORVARIABLES				
2.1	Controlchartforvariables	2	Chalk &Talk	BlackBoard
2.2	TheGeneraltheoryofControlChart–DefinitionofControlChart–LearningOutcome‟softheControlCharts	4	Discussion	PPT& White board
2.3	$\bar{X}$andRCharts,Controllimitsfor $\bar{X}$Chart	3	Chalk &Talk	BlackBoard
2.4	ControllimitsforRChart	3	Chalk &Talk	BlackBoard
2.5	Interpretationofcontrolcharts XandR.- chart– Basisofsubgrouping-plottingXandσR	3	Chalk &Talk	BlackBoard

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
	results			
UNIT-3CONTROLCHARTFORATTRIBUTES				
3.1	Control chart for attributes – Controlchartforfractiondefective(p-chart)	3	Chalk &Talk	BlackBoard
3.2	Controlchartfornumberofdefectives(d-chart)	3	Chalk &Talk	BlackBoard
3.3	Interpretationofpchart	3	Chalk &Talk	BlackBoard
3.4	Controlchartfornumberofdefectsperunit(c-chart)	3	Chalk &Talk	BlackBoard
3.5	chartsforvariablesamplesize	3	Chalk &Talk	BlackBoard
UNIT-4SAMPLINGPLANS				
4.1	Acceptanceofsamplingplansforattributes	4	Chalk &Talk	BlackBoard
4.2	Producer'sriskandconsumer'srisk	3	Chalk &Talk	BlackBoard
4.3	ConceptsofAQL,LTPD,AOQ,AOQL,ATIandASN	4	Chalk &Talk	BlackBoard
4.4	Single and double samplingplans,Doublesamplingplans	4	Chalk &Talk	BlackBoard
UNIT-5RELIABILITY				
5.1	Definition–Bath tub curve - Achievementofreliability	3	Chalk &Talk	BlackBoard
5.2	Designingforreliability–measurementanofreliability–costofreliability	4	Chalk &Talk	BlackBoard
5.3	Maintenanceandreliability–MTBF––MTTR–Hazard	4	Chalk &Talk	BlackBoard

Module No.	Topic	No.ofLectures	Teaching Pedagogy	TeachingAids
	analysis–MTTF			
5.4	Qualityand reliability–Reliabilityofseries,parallelandmixedsystems.	4	Chalk &Talk	BlackBoard

Levels	C1	C2	C3	C4	C5	TotalScholasticMarks	NonScholasticMarks C6	CIA Total	% ofAssessment
	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%
NonScholastic	-	-	-	-	-		5	5	12.5%
Total	10	10	5	5	5	35	5	40	100%

CIA	
Scholastic	35
NonScholastic	5
	40

- ✓ **ThelevelsofCIAAssessmentbasedonRevisedBloom'sTaxonomyare:**

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

EVALUATIONPATTERN

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

COURSEOUTCOMES

Onthesuccessfulcompletionofthecourse,studentswillbeableto:

NO.	COURSEOUTCOMES	KNOWLEDGE LEVEL(ACCORDINGTOREVISEDBLOOM'STAXONOMY)	PSOsADDRESSED
CO1	Describetheuseofcontrolcharts	K1	PSO1&PSO2
CO2	Demonstratetheabilityto design,use and interpret control charts forvariables.	K2	PSO4
CO3	Identifythedifferencebetween$\bar{X}$,R, p,npandCcharts.	K1&K3	PSO2 &PSO5
CO4	Explaintheprocessofacceptancesampling and describe the use of OCcurve.	K1,K2&K3	PSO5
CO5	Make use of the concept of Reliabilityandexamineitsusesinproblemsofqualityandcost.	K3&K4	PSO5 &PSO6

MappingofC0swithPSOs

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

MappingofC0swithPOs

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

Note: ♦StronglyCorrelated–**3** ♦ModeratelyCorrelated–**2**

♦ WeaklyCorrelated-**1**

COURSEDESIGNER:

1. **Dr.P.Vetriselvi**
2. **Mrs.K.Bhuvaneswari**

ForwardedBy

Dr.E.Helena

III B.Sc. STATISTICS

SEMESTER –VI

For those who joined in 2019 onwards

Skill Development-100%

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USST	19ST6CC14	Stochastic Processes	Lecture	5	4

COURSE DESCRIPTION

This course covers Markov chains in discrete time, the Poisson process and the Markov processes in continuous time

COURSE OBJECTIVES

To expose the students to the basics of stochastic process and to clarify Markov chain, Poisson process and pure birth

UNIT –I STOCHASTIC PROCESSES (15 HRS.)

Definition of stochastic process, classification of stochastic process according to time parameter space and state space - examples of stochastic process. Concept of Stationary and independent increment process

UNIT –II MARKOV CHAIN (15 HRS.)

Markov chain – definitions and examples – higher transition probabilities – Chapman – Kolmogorov equations (discrete) - simple problems only.

UNIT – III MARKOV CHAIN CONT. (15 HRS.)

Generalization of independent Bernoulli trails: Sequence of chain – Dependent trails – Correlated random walk – Classification of states and chain – Transient and persistent States

UNIT –IV POISSON PROCESS (15 HRS.)

. **Poisson Process – (**Self Study) – Postulates – Properties – Related distributions – exponential, uniform, geometric and **negative binomial distributions – (**Self Study).

UNIT –V BIRTH AND DEATH PROCESS (15 HRS.)

Pure Birth Process – Yule-Fury process – Birth and Death Process – Immigration - Emigration processes

TEXT BOOKS:

1. J. Medhi, *Stochastic Process*, New age International, 4^{th} edition (2009).
2. T. Veerarajan, *Probability, Statistics and Random Processes*, Second edition, Tata McGraw-Hill Publishing Company Ltd., New Delhi (2003).

REFERENCE BOOKS:

1. W. Feller, *Introduction to Probability Theory and its Applications*, Volume I, Wiley Eastern Ltd, New York (1972).
2. S. Karlin and H.M.Taylor, *A Fist course in Stochastic Processes*, Academic Press, New York (1975).
3. S.M. Ross, *Stochastic Processes*, John Wiley and Sons, New York (1983).

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 STOCHASTIC PROCESS				
1.1	Definition of stochastic process	3	Lecture	PPT & White board
1.2	Classification of stochastic process according to time parameter space and state space-	4	Chalk & Talk	Black Board
1.3	Examples of stochastic process	4	Chalk & Talk	Black Board
1.4	Concept of Stationary and independent increment process.	4	Chalk & Talk	Black Board
UNIT -2 MARKOV CHAIN				
2.1	Markov chain	3	Chalk & Talk	Black Board
2.2	Higher transition probabilities	4	Chalk & Talk	Black Board
2.3	Chapman – Kolmogorov equations	4	Chalk & Talk	Black Board
2.4	Simple problems	4	Chalk & Talk	Black Board
UNIT -3				

3.1	Generalization of independent Bernoulli trails: Sequence of chain	4	Chalk & Talk	Black Board
3.2	Dependent trails – Correlated random walk–	4	Chalk & Talk	Black Board
3.3	Classification of states and chain	4	Chalk & Talk	Black Board
3.4	Transient and persistent States	3	Chalk & Talk	Black Board
UNIT -4 POISSON PROCESS				
4.1	Poisson Process– Postulates	3	Chalk & Talk	Black Board
4.2	Properties – Related distributions	5	Chalk & Talk	Black Board
4.3	Exponential, uniform, geometric and negative binomial distribution	7	Discussion	PPT & White Board
UNIT -5 BIRTH AND DEATH PROCESS				
5.1	Pure Birth Process	3	Discussion	PPT & White Board
5.2	Yule-Fury process	4	Chalk & Talk	Black Board
5.3	Birth and Death Process	4	Chalk & Talk	Black Board
5.4	Immigration - Emigration processes	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 %
Total	10	10	5	5	5	35	5	40	100 %

CIA	
holastic	5
n Scholastic	5
	0

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

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

EVALUATION PATTERN

	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	Explain the concept of stochastic proc and stationary and appreciate significance	K1 & K2	PSO1& PSO2
CO 2	Compute probabilities of transition between states and identify classes of states in Markov chains and characterize the classes	K1, K2 & K3	PSO3
CO 3		K1 & K2	PSO5
CO 4	Explain Poisson process and its related distributions	K2 & K4	PSO5 & PSO6
CO 5	Demonstrate the knowledge in Pure and Death process	K1 & K2	PSO5

Mapping of C0s 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	2	2	2	2	3	2
CO5	2	2	2	2	3	3

Mapping of C0s with POs

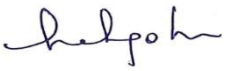
CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	2	2	1
CO2	2	3	2	2
CO3	2	2	3	3
CO4	2	2	2	3
CO5	3	2	2	2

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

COURSE DESIGNER:

1. **Dr. M. Mano Prabha**
2. **Mrs. K. Bhuvaneswari**

Forwarded By



Dr. E. Helena

IIIB.Sc.STATISTICS

SEMESTER VI

Forthosewhojoinedin2019onwards

Entrepreneurship-60%

&Employability-40%

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USST	19ST6CC15	Actuarial statistics	Lecture	5	5

COURSEDESCRIPTION

Thecoursecoverstheapplicationsofinsuranceandfinance.

COURSEOBJECTIVES

TheActuarialstatisticscurriculumaimsatproviding the academicsandprofessionaltrainingtostudentswhowishtojointheactuarialprofession

UNIT–I SIMPLE&COMPOUNDINTEREST (15HRS.)

Elements of simple & compoundinterest - nominalrate of interesti(m)andeffectiverateofinteresti–Forceofinterestδ-relationshipbetweendifferent rates of interest- expression for δ by use of calculus - relationshipbetween nominal and effective rates of interest - present value – varyingrates of interest – equation of value – equated time – **simple discount –discount&discountedvalue–(**SelfStudy**).**

UNIT–II ANNUITIES (15HRS.)

Annuities – immediate annuity – annuity due – perpetuity - deferredannuities-presentvalues,accumulatedamountsofannuities. Increasinganddecreasingannuities.

UNIT–III REDEMPTIONOFLOANS (15HRS.)

RedemptionofLoans – Amortization and Sinking Funds - AverageYieldofinterestontheLifeFundofaninsuranceoffice.SimpleProblems

UNIT–IV PREMIUM (15HRS.)

Premiums;generalprinciples,naturalpremiums,office&netpremiums,loadingforexpenseswithandwithoutprofitpremiums,adequacyofpremiums,relativeconsistency.SimpleProblems.

UNIT–V POLICYVALUES (15HRS.)

Policyvalues-retrospectiveandprospectivepolicies;Surplus–sourcesofsurplus,distributionofsurplus.

TEXTBOOKS:

1. Dixit,S.P.,Modi,C.S.,Joshi,R.V.(2000):MathematicalBasisoflifeAssurance,IC-81(PublishedbyInsuranceInstituteofIndia,Bombay-400001).
2. Frank Ayers, J.R. (1983): Theory and problems of mathematics offinance,Schaum"soutlineseries,McGraw-Hillbookcompany,Singapore.

REFERENCEBOOKS:

1. Donald,D.W.A.(1975):CompoundInterestandAnnuitiescertain,Heinemann,London
2. Zima,P.andBrown,R.L.(2005):Theoryandproblemsofmathematicsoffinance,2ndedition,TataMcGraw-Hill.

COURSECONTENTS&LECTURESCHEDULE:

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
UNIT-1SIMPLE&COMPOUNDINTEREST				
1.1	Elements of simple & compoundinterest	1	Chalk &Talk	BlackBoard
1.2	nominalrateofinteresti(m)andeffectiverateofinteresti	2	Chalk &Talk	BlackBoard
1.3	Forceofinterestδ	1	Lecture	PPT& White board
1.4	relationshipbetweendifferentratesofinterest	2	Chalk &Talk	BlackBoard
1.5	expressionforδbyuseofcalculus	2	Chalk &Talk	BlackBoard
1.6	relationshipbetweennominalandeffectiveratesofinterest	2	Lecture	PPT& White board
1.7	presentvalue,varyingratesofinterest	2	Chalk &Talk	BlackBoard
1.8	equationofvalue,equatedtime	2	Chalk &Talk	BlackBoard
1.9	simplediscount,discount&discountedvalue	1	Discussion	PPT& White board
UNIT-2ANNUITIES				
2.1	Annuities,immediateannuity,annuitydue	4	Lecture	PPT& White board
2.2	Perpetuity,deferredannuities	3	Lecture	PPT& White board
2.3	Presentvalues,accumulated	4	Lecture	PPT& White

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
	amountsofannuities			board
2.4	Increasinganddecreasingannuities	4	Lecture	PPT& White board
UNIT-3REDEMPTIONOFLOANS				
3.1	RedemptionofLoans	3	Chalk &Talk	BlackBoard
3.2	AmortizationandSinkingFunds	3	Chalk &Talk	BlackBoard
3.3	Average yieldof intereston theLifeFundofaninsuranceoffice	4	Chalk &Talk	BlackBoard
3.4	SimpleProblems	5	Chalk &Talk	BlackBoard
UNIT-4 PREMIUM				
4.1	Premiums;generalprinciples, naturalpremiums	3	Lecture	PPT& White board
4.2	Officeandnetpremiums	2	Lecture	PPT& White board
4.3	Loadingforexpenseswithandwithoutprofitpremiums	3	Lecture	PPT& White board
4.4	Adequacyofpremiums,relativeconsistency	2	Chalk &Talk	BlackBoard
4.5	SimpleProblems.	5	Chalk &Talk	BlackBoard
UNIT-5POLICYVALUES				
5.1	Retrospectiveandprospectivepolicies	4	Lecture	PPT& White board

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
5.2	Surplus	3	Lecture	PPT& White board
5.3	Sourcesofsurplus	4	Lecture	PPT& White board
5.4	Distributionofsurplus.	4	Lecture	PPT& White board

Levels	C1	C2	C3	C4	C5	TotalScholasticMarks	NonScholasticMarks C6	CIA Total	% ofAssessment
	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%
NonScholastic	-	-	-	-	-		5	5	12.5%
Total	10	10	5	5	5	35	5	40	100%

CIA	
Scholastic	35
NonScholastic	5
	40

- ✓ **ThelevelsofCIAAssessmentbasedonRevisedBloom'sTaxonomyare:**

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

EVALUATIONPATTERN

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

COURSEOUTCOMES

Onthesuccessfulcompletionofthecourse,studentswillbeableto:

NO.	COURSEOUTCOMES	KNOWLEDGE LEVEL(ACCORDINGTOREVISEDBLOOM'STAXONOMY)	PSOsADDRESSED
CO1	CalculatequantitiessuchasSI&CI,nominalandeffectiveratesofinterestandsimplediscount	K1&K2	PSO1&PSO2
CO2	Recognizesimpleassuranceandannuitiescontractsanddevelopformulaeforthepresentvalueofpayments	K1,K2&K3	PSO3
CO3	Explaintheconceptsofredemptionofloans	K1&K3	PSO5
CO4	Constructthedemographicstatisticsandpremiums	K3&K4	PSO5
CO5	Describethepolicyvaluesanditstypes	K2&K4	PSO6

MappingofC0swithPSOs

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	2	2	3	2
CO4	2	2	2	2	3	2
CO5	2	2	2	2	2	3

MappingofC0swithPOs

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

Note: ♦StronglyCorrelated–**3** ♦ModeratelyCorrelated–**2**

♦ WeaklyCorrelated-**1**

COURSEDESIGNER:

1. **Dr.P.Vetriselvi**
2. **Ms.D.K.PonOvyaFor**

wardedBy

Dr.E.Helena

IIIB.Sc.STATISTICS

SEMESTER VI

Forthosewhojoinedin2019onwards

Skill Development-100%

PROGRAMMECODE	COURSECODE	COURSETITLE	CATEGORY	HRS/WEEK	CREDITS
USST	19ST6ME5	NumericalMethods	Lecture	5	5

COURSEDESCRIPTION

This course enables the students to solve equations using various NumericalMethods

COURSEOBJECTIVES

To enable the students to solve Algebraic, Transcendental, DifferentialEquationsusingvariousNumericalmethodslikeBisection,Runge-Kutta,EulerandTaylor

UNIT–I ALGEBRAICANDTRANSCENDENTALEQUATIONS (15HRS.)

Introduction-Bisectionmethod-Iteration method – Regula-falsimethod–Newton-Raphsonmethod.(Noderivations).

UNIT–II SIMULTANEOUSLINEARALGEBRAICEQUATIONS (15HRS.)

Introduction- – Gauss Elimination method – Gauss Jordan method –Calculation of inverse of a matrix – Gauss Jacobi Iteration method – Gauss-Seideliterationmethod.(Noderivations).

UNIT–III FINITEDIFFERENCES&INTERPOLATION (15HRS.)

. **Differenceoperators– Other difference operators-Relationbetweentheoperators-(**SelfStudy)-Newton‟sforwardInterpolationformula-**Newton'sbackwardInterpolationformula –(**Self Study) -GaussforwardInterpolationformula-**GaussbackwardInterpolationformula–(**Self Study) -Stirling‟s formula - Lagrange‟s interpolation formula – Divideddifference – Newton‟s Divided

difference formula – Inverse interpolation.(Noderivations

UNIT–IV NUMERICALDIFFERENTIATIONANDINTEGRATION (15HRS.)

DerivativesusingNewton‟s forward difference formula-DerivativesusingNewton‟sbackwarddifferenceformula-DerivativesusingCentraldifferenceformula-Maximaandminimaoftheinterpolatingpolynomial-NumericalIntegration–TrapezoidalRule–Simpson‟sonethirdrule.(Noderivations

UNIT–V NUMERICALSOLUTIONOFDIFFERENTIALEQUATION (15HRS.)

Taylorseriesmethod–Picard‟smethod–Euler‟smethod–ModifiedEuler‟s method- Runge -Kuttamethods –Second order Runge-Kutta method-HigherorderRunge-KuttamethodPredictor-Correctorformulae-Milne‟sPredictor-Correctorformulae-Adam‟sPredictor-Correctorequations.(Noderivations

TEXTBOOK:

M.K.Venkataraman,*NumericalMethodsinScienceandEngineering*,The Nationalpublishingcompany,fifthedition.

REFERENCES:

1. S.Arumugam, Thangapandi Isaac and A. Soma Sundaram, *NumericalAnalysis*,NewGammaPublishingHouse(2007).
2. S.S.Sastry,*IntroductoryMethodsofNumericalanalysis*,PrenticeHallofIndiaPrivateLimited(1991)

COURSECONTENTS&LECTURESCHEDULE:

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
UNIT-1ALGEBRAICANDTRANSCENDENTALEQUATIONS				
1.1	Bisectionmethod	3	Chalk &Talk	BlackBoard
1.2	Iterationmethod	4	Chalk &Talk	BlackBoard
1.3	Regula-falsimethod	4	Chalk &Talk	BlackBoard
1.4	Newton-Raphsonmethod	4	Chalk &Talk	BlackBoard

UNIT-2 SIMULTANEOUSLINEARALGEBRAICEQUATIONS				
2.1	GaussEliminationmethod	3	Chalk &Talk	BlackBoard
2.2	GaussJordan method	3	Chalk &Talk	BlackBoard
2.3	Calculationofinverseofamatrix	3	Chalk &Talk	BlackBoard
2.4	GaussJacobiIterationmethod	3	Chalk &Talk	BlackBoard
2.5	Gauss-Seideliterationmethod	3	Chalk &Talk	BlackBoard
UNIT-3FINITEDIFFERENCES&INTERPOLATION				
3.1	Differenceoperators	1	Chalk&Talk	BlackBoard
3.2	Newton‟sforwardInterpolationformulaandNewton‟sbackwardInterpolationformula	3	Chalk &Talk	BlackBoard
3.3	GaussforwardInterpolationformulaandGaussbackward	3	Chalk &Talk	BlackBoard

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
	Interpolationformula			
3.4	Stirling‟sformula	3	Chalk &Talk	BlackBoard
3.5	Lagrange‟sinterpolationformula Divideddifference	2	Chalk &Talk	BlackBoard
3.6	Newton‟sDivideddifferenceformula–Inverseinterpolation	3	Chalk &Talk	BlackBoard
UNIT -4 NUMERICAL DIFFERENTIATION AND INTEGRATION				
4.1	DerivativesusingNewton‟sforwarddifference formula-DerivativesusingNewton‟sbackwarddifferenceformula	4	Chalk &Talk	BlackBoard
4.2	Derivatives using Centraldifferenceformula	3	Chalk &Talk	BlackBoard

4.3	Maximaandminimaoftheinterpolatingpolynomial	3	Chalk &Talk	BlackBoard
4.4	NumericalIntegration:TrapezoidalRule	2	Chalk &Talk	BlackBoard
4.5	Simpson‟sonethirdrule	3	Chalk &Talk	BlackBoard
UNIT-5NUMERICALSOLUTIONOFDIFFERENTIALEQUATION				
5.1	Taylorseriesmethod	2	Chalk &Talk	BlackBoard
5.2	Picard‟smethod–Euler‟smethod	2	Chalk &Talk	BlackBoard
5.3	ModifiedEuler‟smethod-Runge-Kuttamethods	2	Chalk &Talk	BlackBoard
5.4	SecondorderRunge-Kuttamethod-HigherorderRunge-KuttamethodPredictor-	3	Chalk &Talk	BlackBoard

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
5.5	Correctorformulae-Milne‟sPredictor	3	Chalk &Talk	BlackBoard
5.6	Correctorformulae-Adam‟sPredictor	3	Chalk &Talk	BlackBoard

	C1	C2	C3	C4	C5	TotalScholasticMarks	NonScholasticMarks C6	CIA Total	

Levels	T1 10 Mks.	T2 10 Mks.	Quiz 5 Mks.	Assignment 5 Mks	OBT/PPT 5 Mks	35 Mks.	5 Mks.	40Mks.	% ofAssessment
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%
NonScholastic	-	-	-	-	-		5	5	12.5%
Total	10	10	5	5	5	35	5	40	100%

CIA	
Scholastic	35
NonScholastic	5
	40

- ✓ **ThelevelsofCIAAssessmentbasedonRevisedBloom'sTaxonomyare:**

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

EVALUATIONPATTERN

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

COURSEOUTCOMES

Onthesuccessfulcompletionofthecourse,studentswillbeableto:

NO.	COURSEOUTCOMES	KNOWLEDGE LEVEL(ACCORDINGTOREVISEDBLOOM'STAXONOMY)	PSOsADDRESSED
CO1	Solvealgebraicandtranscendentalequationsusingvariousmethods	K1&K2	PSO1&PSO2
CO2	Identifythevariousmethodsofsolving simultaneous linear algebraicequations	K1,K2&K3	PSO3
CO3	Recognizedifferenceoperatorsandapplytheconceptofinterpolation.	K1&K3	PSO4
CO4	Compute the values of the derivativesatsomepointusingnumerical differentiationandintegration.	K3&K4	PSO3
CO5	Compute numerical solution ofdifferentialequation	K3&K4	PSO3

MappingofC0swithPSOs

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	2	3	2	2
CO4	2	2	3	2	2	2
CO5	2	2	3	2	2	2

MappingofC0swithPOs

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

Note: ♦StronglyCorrelated–**3** ♦ModeratelyCorrelated–**2**

♦ WeaklyCorrelated-**1**

COURSEDESIGNER:

1. **Mrs.R.Rajeswari**
2. **Mrs.R.JenoviRosaryDeepa**

ForwardedBy

Dr.E.Helena

IIIB.Sc.STATISTICS

SEMESTER VI

Forthosewhojoinedin2019onwards

Skill Development-100%

PROGRAMME CODE	COURSE CODE	COURSETITLE	CATEGORY	HRS/WEEK	CREDITS
USST	19ST6ME6	Multivariate Analysis	Lecture	5	5

COURSEDESCRIPTION

Thecoursecoversmultivariatenormaldistribution,hotellingT^{2}statistics,multivariateclassificationanddiscriminationanalysis,principalcomponentsandclusteranalysis.

COURSEOBJECTIVES

Toderivestatisticalinferencebasedonmultivariatestatisticalanalysis.

UNIT–I MULTIVARIATENORMALDISTRIBUTION (15HRS.)

Multivariatenormaldistributionanditsproperties-**MaximumLikelihoodEstimatorsof parameters, distribution of sample meanvector–(**SelfStudy),sampledispersionmatrix.

UNIT–IIPARTIALANDMULTIPLECORRELATIONCOEFFICIENTS(15HRS.)

Partialandmultiplecorrelationcoefficients-Nulldistribution-Applicationintesting.Null distribution of Hotelling‟s T2 statistics.Applicationintestsonmeanvectorforoneandmoremultivariatenormalpopulationsandalsoonequalityofthecomponentsofameanvectorinamultivariatenormalpopulation

UNIT–III CLASSIFICATIONANDDISCRIMINATION (15HRS.)

Classificationanddiscriminationproceduresfordiscriminationbetweentwomultivariatenormalpopulations–LinearDiscriminantfunction,MahalanobisDistance,testsassociatedwithDiscriminant

functions, probabilities of misclassification and their estimation,classificationintomorethantwomultivariatenormalpopulations.

UNIT–IV PRINCIPALCOMPONENTANALYSIS (15HRS.)

PrincipalcomponentAnalysis,Canonicalvariablesandcanonicalcorrelation, clustering-similarity measures- hierarchical algorithms-SingleLinkage,Non-hierarchicalClustering

UNIT–V CONTINGENCYTABLES (15HRS.)

ContingencyTables,CorrespondenceAnalysisforTwoDimensionContingencyTable.

TEXT:

1. T.W.Anderson,*AnIntroductionToMultivariateStatisticalAnalysis*,2ndEditionWiley(1983).
2. R.JohnsonandWichern*AppliedMultivariateStatisticalAnalysis*,Pearson, 6thedition(2008).

REFERENCES:

1. Brain S. Everitt and Graham Dunn, *AppliedMultivariateDataAnalysis*,2ndEdition(2001)
2. NeilH.Timm,*AppliedMultivariateAnalysis*,Springer(2002).
3. VerlagDallasE.Johnson,*AppliedMultivariateMethodsForDataAnalysts*,DuxburyPress(1998).
4. William.R.DillonandMathewGoldstein*MultivariateAnalysisMethodsand Applications*,JohnWeily(1984).

COURSECONTENTS&LECTURESCHEDULE:

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
UNIT-1 MULTIVARIATENORMALDISTRIBUTION				
1.1	Multivariatenormaldistributionanditsproperties	4	Lecture	PPT& White board
1.2	MaximumLikelihood Estimatorsofparameters	6	Discussion	PPT& White board
1.3	Distribution of sample meanvector,sample dispersionmatrix	5	Chalk &Talk	BlackBoard
UNIT-2PARTIALANDMULTIPLECORRELATIONCOEFFICIENTS				
2.1	Partialandmultiplecorrelationcoefficients-Nulldistribution	4	Chalk &Talk	BlackBoard
2.2	Application in testing ofHotelling‟sT2statistics	4	Chalk &Talk	BlackBoard
2.3	Applicationintests on meanvectorforoneandmoremultivariatenormalpopulations	4	Chalk &Talk	BlackBoard
2.4	equalityofthecomponentsofameanvectorinamultivariatenormalpopulation	3	Chalk &Talk	BlackBoard
UNIT-3CLASSIFICATIONANDDISCRIMINATION				
3.1	Classificationanddiscriminationproceduresfordiscriminationbetweentwomultivariatenormalpopulations	5	Chalk &Talk	BlackBoard
3.2	Lineardiscriminantfunction,Mahalanobisdistance,testsassociatedwithdiscriminantfunctions	5	Chalk &Talk	BlackBoard
3.3	Probabilitiesofmisclassificationand their estimation, classificationintomorethantwo	5	Chalk &Talk	BlackBoard

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
	multivariatenormalpopulations			
UNIT-4PRINCIPALCOMPONENTANALYSIS				
4.1	PrincipalcomponentAnalysis	3	Lecture	PPT& White board
4.2	Canonicalvariablesand canonicalcorrelation	3	Chalk &Talk	BlackBoard
4.3	Clustering-similaritymeasures	3	Chalk &Talk	BlackBoard
4.4	Hierarchicalalgorithms	3	Lecture	PPT& White board
4.5	Single Linkage, Non-hierarchicalCluster	3	Chalk &Talk	BlackBoard
UNIT-5CONTINGENCYTABLES				
5.1	ContingencyTables	7	Chalk &Talk	BlackBoard
5.2	CorrespondenceAnalysisforTwoDimensionContingencyTable	8	Chalk &Talk	BlackBoard

Levels	C1	C2	C3	C4	C5	TotalScholasticMarks	NonScholasticMarks C6	CIA Total	% ofAssessment
	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%
NonScholastic	-	-	-	-	-		5	5	12.5%

Total	**10**	**10**	**5**	**5**	**5**	**35**	**5**	**40**	**100%**

CIA	
Scholastic	**35**
NonScholastic	**5**
	40

- ✓ **ThelevelsofCIAAssessmentbasedonRevisedBloom'sTaxonomyare:**

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

EVALUATIONPATTERN

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

COURSEOUTCOMES

Onthesuccessfulcompletionofthecourse,studentswillbeableto:

NO.	**COURSEOUTCOMES**	**KNOWLEDGELEVEL(ACCORDINGTOREVISEDBLOOM'STAXONOMY)**	**PSOsADDRESSED**
CO1	Derivetheimportantpropertiesofmultivariatenormaldistribution.	K1	PSO1&PSO2
CO2	ComputehotellingT^{2}statistics testonmeanvectorandmultivariatenormalpopulation.	K2&K4	PSO5
CO3	Understandhowtoassesstheefficacyofaclassificationanddiscriminationanalysis.	K2&K3	PSO5
CO4	Introduce principal componentsanalysisandclusteringmethods.	K1,K3&K4	PSO6

CO5	Explain and Analyse contingencytables.	K1,K3&K4	PSO6

MappingofC0swithPSOs

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	2	2	3	2
CO4	2	2	2	2	2	3
CO5	2	2	2	2	2	3

MappingofC0swithPOs

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

Note: ♦StronglyCorrelated–**3** ♦ModeratelyCorrelated–**2**

♦ WeaklyCorrelated-**1**

COURSEDESIGNER:

1. **Dr.P.Vetriselvi**
2. **Mrs.K.Bhuvaneswari**

ForwardedBy

Dr.E.Helena

IIIB.Sc.STATISTICSSEMESTER VI

Forthosewhojoinedin2019onwards

Skill Development-100%

PROGRAMMECODE	COURSECODE	COURSETITLE	CATEGORY	HRS/WEEK	CREDITS
USST	19ST6ME7	Regression Analysis	Lecture	5	5

COURSEDESCRIPTION

Thiscoursefocusesonbuildingagreaterunderstandingonstatisticaltoolsforapplyingthelinearregressionmodelanditsgenerations.

COURSEOBJECTIVES

Toexposethestudentstoregressionmodelsapplicabletoreallifesituation.

UNIT–I CORRELATION (15HRS.)

Partialandmultiplecorrelationcoefficients,relationshipsamongsimple, multipleandpartialcorrelationcoefficients–biserialcorrelationcoefficients.

UNIT–II SIMPLELINEARREGRESSIONMODEL-I (15HRS.)

Simplelinearregressionmodel:Descriptionofthedatamodel– estimationofparametersbyleastsquaremethodandtest of hypothesis – indexoffit–predictedvaluesandstandarderrors – evaluation of fit – analysisofresiduals.

UNIT–III SIMPLELINEARREGRESSIONMODEL-II (15HRS.)

Effect of outliers in simple regression – model, adequacy and residualplots–deletionofdatapoints–**transformationof variables – transformationtoachievelinearity** (Self Study) – transformation tostabilizevariance–removalofheterogeneity–principlesofweightedleastsquares.

UNIT–IV MULTIPLELINEARREGRESSION (15HRS.)

Multiplelinearregressions:DescriptionoftheDatamodel– propertiesofleastsquaresestimators – predicted values and standard errors inmultipleregression–generalizedleastsquares.

UNIT–V INFERENCEONGLM (15HRS.)

InferenceonGLM:Testof hypothesis on the linear model – Assumptionabouttheexplanatoryvariable– testingasubsetofregressioncoefficientequalstozero– testingofequalityofregressioncoefficients.

TEXTBOOK:

D.C.Montgomery,E.APeck,.andG.G.Vining,*Introductiontolinearregressionanalysis*,thirdedition,JohnWileyandSons,Inc.(2003).

REFERENCES:

1. N.R.Draper,. and H.Smith, *Applied Regression Analysis*, thirdedition,JohnWileyandSons,Inc.(2003).
2. J.Johnson, *Econometric methods*, third edition, McGraw-HillInternational(1984).
3. V.K.Kapoor, and S.C.Gupta, *Fundamentals of MathematicalStatistics*,SultanChandandSons(2007).

COURSECONTENTS&LECTURESCHEDULE:

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
UNIT-1CORRELATION				
1.1	Partialandmultiplecorrelationcoefficients	5	Chalk &Talk	BlackBoard
1.2	Relationshipsamongsimple,multipleandpartialcorrelationcoefficients	5	Lecture	PPT& White board
1.3	Biserialcorrelationcoefficients	5	Chalk &Talk	BlackBoard
UNIT-2SIMPLELINEARREGRESSIONMODEL–I				
2.1	Descriptionofthedatamodel	1	Chalk &Talk	BlackBoard
2.2	Estimationofparametersbyleast squaremethod	3	Chalk &Talk	BlackBoard
2.3	Testofhypothesis	3	Chalk &Talk	BlackBoard
2.4	Indexoffit	2	Chalk &Talk	BlackBoard
2.5	Predictedvaluesandstandarderrors–evaluationoffit	3	Chalk &Talk	BlackBoard
2.6	Analysisofresiduals.	3	Chalk &Talk	BlackBoard
UNIT-3SIMPLELINEARREGRESSIONMODEL–II				
3.1	Effectofoutliersinsimpleregression	3	Chalk &Talk	BlackBoard
3.2	Model,adequacyandresidualplots	3	Chalk &Talk	BlackBoard
3.3	Deletionofdatapoints	3	Chalk &Talk	BlackBoard

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
3.4	Transformationofvariables–transformationtoachievelinearity	3	Discussion	PPT
3.5	Transformationtostabilizevariance	2	Discussion	PPT
3.6	Removalofheterogeneity	2	Chalk &Talk	BlackBoard
3.7	Principlesofweightedleastsquares.	2	Chalk &Talk	BlackBoard
UNIT-4MULTIPLELINEARREGRESSION				
4.1	DescriptionoftheDatamodel	3	Chalk &Talk	BlackBoard
4.2	Propertiesofleastsquaresestimators	4	Chalk &Talk	BlackBoard
4.3	Predictedvaluesandstandarderrorsinmultipleregression	5	Chalk &Talk	BlackBoard
4.4	Generalizedleastsquares.	3	Chalk &Talk	BlackBoard
UNIT-5INFERENCEONGLM				
5.1	Testofhypothesisonthelinearmodel	4	Chalk &Talk	BlackBoard
5.2	Assumptionaboutthee xplanatoryvariable	3	Chalk &Talk	BlackBoard
5.3	testingasubsetofregressioncoefficientequalstozero	4	Chalk &Talk	BlackBoard
5.4	Testingofequalityofregressioncoefficients	4	Chalk &Talk	BlackBoard

Levels	C1	C2	C3	C4	C5	TotalScholasticMarks	NonScholasticMarks C6	CIA Total	% ofAssessment
	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%
NonScholastic	-	-	-	-	-		5	5	12.5%
Total	10	10	5	5	5	35	5	40	100%

CIA	
Scholastic	35
NonScholastic	5
	40

- ✓ **ThelevelsofCIAAssessmentbasedonRevisedBloom'sTaxonomyare:**

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

EVALUATIONPATTERN

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

COURSEOUTCOMES

Onthesuccessfulcompletionofthecourse,studentswillbeableto:

NO.	COURSEOUTCOMES	KNOWLEDGE LEVEL(ACCORDINGTOREVISEDBLOOM'STAXONOMY)	PSOsADDRESSED
CO1	Classify and compute simple,multipleandpartial correlation.	K1&K3	PSO1&PSO2
CO2	Evaluatetheregressionmodelandestimatethestandarderror	K2&K4	PSO3
CO3	Applymultiplelinearregressionanalysisandclassifysimplelinearregressionanalysisandmultiplelinearregressionanalysis	K2&K4	PSO5
CO4	Test equality of regressioncoefficients	K2,K3&K4	PSO3 &PSO 5

MappingofC0swithPSOs

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

MappingofC0swithPOs

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

Note: ♦StronglyCorrelated–**3** ♦ModeratelyCorrelated–**2**

♦ WeaklyCorrelated-**1**

COURSEDESIGNER:

1. **Dr.P.Vetriselvi**
2. **Ms.D.K.PonOvya**

ForwardedBy

Dr.E.Helena

IIIB.Sc.STATISTICSS

EMESTER VI

Forthosewhojoinedin2019onwards

Skill Development-100%

PROGRAMME CODE	COURSE CODE	COURSET ITLE	CATEGORY	HRS/WEEK	CREDITS
USST	19ST6ME8	Operations Research	Lecture	5	5

COURSEDESCRIPTION

Thishelpsinsolving indifferent environmentsthatneedsdecisions.

COURSEOBJECTIVES

Toaimatfamiliarizingthestudentswithquantitativetoolsandtechniques, which are frequently applied to business decision making and toprovideaformalquantitativeapproachtoproblemsolving.

UNIT–I SEQUENCINGPROBLEM (15HRS.)

Introduction–problemof sequencing – Basic terms used insequencing-Processingnjobsthroughtwomachines–**Processingnjobsthroughkmachines-Processing 2 jobs through k machines** (SelfStudy).

UNIT–II GAMESANDSTRATEGIES (15HRS.)

Introduction – Two person zero sum games – Some basic terms -Themaximin-minimaxprinciple–Gameswithoutsaddlepoints–mixedstrategies–Graphicalsolutionof2xnandmx2games–Dominanceproperty – Arithmetic method for n x n game – General solution of m x nrectangulargames.

UNIT–III INVENTORYCONTROL (15HRS.)

Introduction–TheInventorydecisions– Cost associated withinventories–Factorsaffectinginventorycontrol-EconomicOrderQuantity(EOQ) – Deterministic inventory problems with no shortages - Deterministicinventoryproblemswithshortages–Probabilisticinventoryproblems.

UNIT–IV QUEUINGTHEORY (15HRS.)

Introduction-Queuingsystem–ElementsofQueuingsystem–Operating characteristics of queuing system – Probability distributions inqueuing systems – Classification of queuing models – Definition of transientand steady states – Poisson queuing systems –Model I (M/M/1):(∞ / FIFO) – ModelII(M/M/I):(∞/SIRO)-ModelIII(M/M/1):(N/FIFO).

UNIT–V NETWORKSCHEDULINGBYPERT/CPM (15HRS.)

Introduction – Network and basic components – Logical sequencing – Rulesofnetworkconstruction–Criticalpathanalysis–
probabilityconsiderationsinPERT

TEXTBOOK:

UNITI-Chapter12:Sections12.1to12.6
UNITII-Chapter17:Sections17.1to17.9
UNITIII-Chapter19:Sections19.1to19.7,19:12.1,19:12.2
UNITIV-Chapter20:Sections20.1to20.8(UptomodelIII)
UNITV-Chapter21:Sections21.1to21.6

REFERENCES:

1. PremKumarGuptaandD.SHira,*ProblemsinOperationsResearch*,Sultan Chand&Co.Ltd.,Revisededition(2009).
2. P.KGuptaandManMohan,*ProblemsinOperationsResearch*,SultanChand &Sons(2007).

COURSECONTENTS&LECTURESCHEDULE:

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
UNIT-1SEQUENCINGPROBLEM				
1.1	Problemofsequencing	2	Chalk&Talk	BlackBoard
1.2	Basictermsusedinsequencing	2	Chalk &Talk	LCD
1.3	Processingnjobsthroughtwomachines	4	Lecture	PPT& White board
1.4	Processingnjobsthroughkmachines	4	Discussion	BlackBoard
1.5	Processing2jobsthroughkmachines.	3	Discussion	BlackBoard
UNIT-2GAMESANDSTRATEGIES				
2.1	Twopersonzerosumgames	1	Chalk &Talk	BlackBoard
2.2	Themaximin-minimaxprinciple	1	Chalk &Talk	BlackBoard
2.3	Gameswithoutsaddlepoints	3	Chalk &Talk	BlackBoard
2.4	mixedstrategies	2	Chalk &Talk	BlackBoard
2.5	Graphicalsolutionof2xnandmx2games	2	Chalk &Talk	BlackBoard
2.6	Dominanceproperty– Arithmeticmethodfornxngame–	3	Chalk &Talk	BlackBoard
2.7	Generalsolutionofmxnrectangulargames	3	Chalk &Talk	BlackBoard
UNIT-3 INVENTORYCONTROL				

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
3.1	TheInventorydecisions	1	Chalk &Talk	BlackBoard
3.2	Costassociatedwithinventories	1	Chalk &Talk	BlackBoard
3.3	Factorsaffectinginventorycontrol	1	Chalk &Talk	BlackBoard
3.4	EconomicOrderQuantity(EOQ)	3	Chalk &Talk	BlackBoard
3.5	Deterministicinventoryproblemswithnoshortages	3	Chalk &Talk	BlackBoard
3.6	Deterministicinventoryproblemswithshortages	3	Chalk &Talk	BlackBoard
3.7	Probabilisticinventoryproblems	3	Chalk &Talk	BlackBoard
UNIT-4 QUEUINGTHEORY				
4.1	Queuingsystem	3	Chalk &Talk	BlackBoard
4.2	ElementsofQueuingsystem	3	Chalk &Talk	BlackBoard
4.3	Operatingcharacteristicsofqueuingsystem	3	Chalk &Talk	BlackBoard
4.4	Probabilitydistributionsinqueuingsystems	3	Chalk &Talk	BlackBoard
4.5	Classificationofqueuing	3	Chalk &Talk	BlackBoard
UNIT-5NETWORKSCHEDULINGBYPERT/CPM				
5.1	Networkandbasiccomponents	2	Lecture	PPT& White Board
5.2	Logicalsequencing	4	Chalk&	Black

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
			Talk	Board
5.3	Rulesofnetworkconstruction	4	Chalk &Talk	BlackBoard
5.4	Criticalpathanalysis–probabilityconsiderations	5	Chalk &Talk	BlackBoard

Levels	C1	C2	C3	C4	C5	TotalScholasticMarks	NonScholasticMarks C6	CIA Total	% ofAssessment
	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%
NonScholastic	-	-	-	-	-		5	5	12.5%
Total	10	10	5	5	5	35	5	40	100%

CIA	
Scholastic	35
NonScholastic	5
	40

- ✓ **ThelevelsofCIAAssessmentbasedonRevisedBloom'sTaxonomyare:**

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

EVALUATIONPATTERN

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

COURSEOUTCOMES

Onthesuccessfulcompletionofthecourse,studentswillbeableto:

NO.	COURSEOUTCOMES	KNOWLEDGE LEVEL(ACCORDINGTOREVISEDBLOOM'STAXONOMY)	PSOsADDRESSED
CO1	Definesequencingproblemandapplyittosolvereallifeproblems.	K1	PSO1&PSO2
CO2	Solveproblems in decision making.	K1&K2	PSO3
CO3	Apply inventory control to solvepracticalproblems.	K1&K3	PSO5
CO4	Classifyqueuingmodels.	K2&K4	PSO5
CO5	ExplainCPMandPERTtoplanschedulea ndcontrolprojectactivities.	K2&K4	PSO5 &PSO6

MappingofC0swithPSOs

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

MappingofC0swithPOs

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

Note: ♦StronglyCorrelated–**3** ♦ModeratelyCorrelated–**2**

♦ WeaklyCorrelated-**1**

COURSEDESIGNER:

1. **Mrs.R.JenoviRosaryDeepa**
2. **Mrs.B.VethamaryJacquline**

ForwardedBy

Dr.E.Helena

IIIB.Sc.STATISTICSS

EMESTER VI

Forthosewhojoinedin2019onwards

Skill Development-50%
&Employability-50%

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USST	19ST6ME9	Industrial Statistics	Lecture	5	5

COURSEDESCRIPTION

Thiscourseisconcernedwithmaintainingandimprovingthequalityofgoodsandservices

COURSEOBJECTIVES

This course enables the students competent to undertake industrialresearches

UNIT–I INVENTORYPLANNING (15HRS.)

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Inventoryplanning:Conceptofplannedinventorypolicies:Deterministic models-Policywheninventorylevelsarereviewedcontinuously and demands occur uniformly with and without shortage costsEconomicorderquantity.

UNIT–II PRODUCTIONPLANNING (15HRS.)

. Policy for production planning when inventory levels are reviewedperiodicallyStochasticmodelsSingleperiodmodelwithnosetupcosthaving zero or non-zero initial stock {(s,S) policy} Solving special cases usingcomputerpackages.

UNIT–III FORECASTING (15HRS.)

Forecasting:Conceptofforecastingand its applications inmanufacturingand non manufacturing industrial situations Differentmethodsofforecastingincludingaverage,lastvalue,weightedaverage(exponentialsmoothing)**Forecastinginpresenceoflineartrends**

usingleastsquaremethods(SelfStudy)-
Forecastinginpresenceofseasonaleffects Solvingspecialcasesusingcomputerpackage.

UNIT–IV RELIABILITY (15HRS.)

.

Reliability:Definitionsandrelationshipsbetweensurvivalfunction,hazard function, hazard rate of a non-negative random variable - Parametricdistributions:Weibull,amma,LognormalandExponentialaslifetime distributions - Concept of aging, IFR, IFRA classes of distributions and theirdual.

UNIT–V STRUCTUREFUNCTIONS (15HRS.)

Coherentsystemasbinaryfunction:Minimalcutandpathsets(vectors)-Representationofstructurefunctionofseries,parallelandkoutofn:Gsystemsofindependentcomponents-Minimalcut and pathstructurefunctions-DualofacoherentstructureDerivationofreliabilitiesofabovestructures.

TEXTBOOK:

1. H.A.Taha,*OperationsResearch*,MacmillanPublishingCo.(1999).
2. F.S.HillerandG.J.Libermann,*IntroductiontoOperations Research*,6thEdition,McGrawHill(1995).
3. L.J.BainandEnghardt,*StatisticalAnalysisofReliabilityandLifeTestingModels*,MarckelDekker(1991).

REFERENCES:

1. S.Zacks,*IntroductiontoReliabilityAnalysis,ProbabilitymodelsandStatistical methods*,SpringerVerlag(1992).
2. R.E.BarlowandF.Proschan,*StatisticaltheoryofReliabilityandLifetesting:Probabilitymodels*,Holt,RinehartandWinston(1975)

COURSECONTENTS&LECTURESCHEDULE:

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
UNIT-1 INVENTORYPLANNING				
1.1	Concept of planned inventory policies	2	Chalk &Talk	BlackBoard
1.2	Deterministicmodels	2	Chalk &Talk	LCD
1.3	Policywheninventorylevelsare reviewed continuously and demands occur uniformly with shortagecosts	4	Chalk &Talk	BlackBoard
1.4	Policywheninventorylevelsare reviewed continuously and demands occur uniformly withoutshortagecosts	4	Chalk &Talk	BlackBoard
1.5	Economicorderquantity	3	Chalk &Talk	BlackBoard
UNIT-2 PRODUCTIONPLANNING				
2.1	Policyfor production planning when inventory levels are reviewedperiodically	5	Chalk &Talk	BlackBoard
2.2	StochasticmodelsSingleperiod model with no set up cost havingzero	5	Chalk &Talk	BlackBoard
2.3	Non-zero initial stock {(s,S) policy} Solving special cases usingcomputerpackages.	5	Chalk &Talk	BlackBoard
UNIT-3FORECASTING				
3.1	Concept of forecasting and its applications in manufacturing	3	Chalk &Talk	BlackBoard

Module No.	Topic	No.ofLectures	Teaching Pedagogy	Teaching Aids
	and non manufacturing industrialsituations			
3.2	Different methods of forecasting including average, last value, weighted average(exponential smoothing)	3	Chalk &Talk	BlackBoard
3.3	Forecastinginpresenceoflinear trends using least square methods	3	Discussion	BlackBoard
3.4	Forecasting in presence of seasonaleffects	3	Discussion	BlackBoard
3.5	Solving special cases using computerpackage	3	Chalk &Talk	BlackBoard
UNIT-4RELIABILITY				
4.1	Definitions and relationships between survival function, hazardfunction,	3	Chalk &Talk	BlackBoard
4.2	Hazard rate of a non-negative randomvariable	2	Chalk &Talk	BlackBoard
4.3	Weibull,amma,Lognormaland Exponential as life time distributions	5	Chalk &Talk	BlackBoard
4.4	Concept of aging, IFR, IFRA classesofdistributionsandtheir dual	5	Chalk &Talk	BlackBoard
UNIT-5STRUCTUREFUNCTIONS				
5.1	Coherent system as binary function:Minimalcutandpath sets(vectors)	3	Chalk &Talk	BlackBoard

Module No.	Topic	No.ofLectures	Teaching Pedagogy	TeachingAids
5.2	Representationofstructurefunction of series, parallel and koutofn:Gsystemsof independentcomponents	3	Chalk &Talk	BlackBoard
5.3	Minimalcutandpathstructure functions	3	Chalk &Talk	BlackBoard
5.4	Dualofacoherentstructure	3	Chalk &Talk	BlackBoard
5.5	Derivation of reliabilities of abovestructures.	3	Chalk &Talk	BlackBoard

Levels	C1	C2	C3	C4	C5	TotalScholasticMarks	NonScholasticMarks C6	CIA Total	% ofAssessment
	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%
NonScholastic	-	-	-	-	-		5	5	12.5%
Total	10	10	5	5	5	35	5	40	100%

CIA	
Scholastic	35
NonScholastic	5
	40

✓ **ThelevelsofCIAAssessmentbasedonRevisedBloom'sTaxonomyare:**

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

EVALUATIONPATTERN

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

COURSEOUTCOMES

Onthesuccessfulcompletionofthecourse,studentswillbeableto:

NO.	COURSEOUTCOMES	KNOWLEDGE LEVEL(ACCORDINGTOREVISEDBLOOM'STAXONOMY)	PSOsADDRESSED
CO1	Summarizetheconcept ofdeterministicmodelswhenthedemand soccuruniformlywithandwithoutshortagecosts.	K1	PSO1&PSO2
CO2	Explainthepolicyforproductionplanning wheninventorylevelsarereviewedperiodically	K1&K2	PSO3 &PSO4
CO3	Demonstratetheconceptofforecastingandits applicationsinmanufacturing and nonmanufacturingindustrialsituations.	K1,K2&K3	PSO5 &PSO6
CO4	Classify survival functions andhazardfunctions	K2&K4	PSO5

MappingofC0swithPSOs

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

MappingofC0swithPOs

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

Note: ♦StronglyCorrelated–**3** ♦ModeratelyCorrelated–**2**

♦ WeaklyCorrelated-**1**

COURSEDESIGNER:

1. **Dr.P.Vetriselvi**
2. **Ms.D.K.PonOvya**

ForwardedBy

Dr.E.Helena

III B.Sc. STATISTICS

For those who joined in 2020 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USST	22ST6ME10	Econometrics	Lecture	5	5

COURSE DESCRIPTION

This course provides the basic principles of econometric models

COURSE OBJECTIVES

This course enables the students to use economic methods in several areas like engineering sciences, biological sciences, medical sciences, geo-sciences, agriculture sciences etc

UNIT –ITHE SIMPLE REGRESSION MODEL

Model with one explanatory variable: Definition, scope and objectives of Econometrics. Linear model with one independent variable - Least squares estimators of regression coefficients, properties of least squares estimators - analysis of variance to regression model

UNIT – II MULTIPLE REGRESSION ANALYSIS: INFERENCE

Model with more variables:Linear model with more than one explanatory variables – assumptions – estimation of model parameter - Least squares estimators and their properties. Hypothesis testing – test the overall significance of the regression – Testing the individual regression coefficients

UNIT – III RESIDUAL ANALYSIS

Adequacy of Model:Model adequacy checking – residual analysis – residuals – standardized residuals – residual plot – normal probability plot – plot of residuals against estimated response. A formal test for lack of fit of the model

UNIT – IV MULTICOLLINEARITY

Multicollinearity: Meaning and sources – consequences of multicollinearity. Test for detecting multicollinearity – Examining the correlation matrix – Variance Inflation factor – Eigen values of X ' X.

UNIT – V AUTOCORRELATION

Autocorrelation: Meaning of serial independence – sources of autocorrelation – first order autoregressive scheme – consequences of autocorrelation – Durbin – Watson test – analysing the model in the presence of autocorrelation

TEXT BOOK:

1. Montgomery, D.C. Peck, E.C. and Vining, G.G. (2003) Introduction to Linear Regression Analysis(3/e), Wiley Eastern, New Delhi
2. Gujarati, D. N., Dawn C Porter and SangeethaKunasekar, (2016), Basic Econometrics,

Fifth Edition, McGraw Hill Publisher, New York

3. Goldberger, A.S. (1964): Econometrics theory. John Wiley & Sons, New Delhi

REFERENCES:

1. Castle, J. and Shephard, N. (2009).The Methodology and Practice of Econometrics.OUP Oxford Publications
2. Kelejion, H.H. and Oates, W.E. (1988). Introduction to Econometrics, Principles and Applications. Harper and Row Publishers Inc., New York
3. Maddala, G.S. and KajalLagari (2009). Introduction to Econometrics. John Wiley & Sons
4. Madnani, G.M.K. (2008): Introduction to Econometrics: Principles and Applications. Oxford and IBH Publishing

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 THE SIMPLE REGRESSION MODEL				
1.1	Model with one explanatory variable: Definition, scope and objectives of Econometrics.	4	Chalk & Talk	Black Board
1.2	Linear model with one independent variable	3	Chalk & Talk	Black Board
1.3	Least squares estimators of regression coefficients,	4	Chalk & Talk	Black Board
1.4	properties of least squares estimators	3	Chalk & Talk	Black Board
1.5	Analysis of variance to regression model	4	Chalk & Talk	Black Board
UNIT -2 MULTIPLE REGRESSION ANALYSIS: INFERENCE				
2.1	Model with more variables: Linear model with more than one explanatory variables.	5	Chalk & Talk	Black Board
2.2	Assumptions and estimation of model parameter - Least squares estimators and their properties.	3	Chalk & Talk	Black Board
2.3	Hypothesis testing ,overall significance of the regression	5	Chalk & Talk	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
2.4	Testing the individual regression coefficients	5	Chalk & Talk	Black Board
UNIT 3 RESIDUAL ANALYSIS				
3.1	Adequacy of Model: Model adequacy checking ,residual analysis , residuals	5	Chalk & Talk	Black Board
3.2	standardized residuals , residual plot	3	Chalk & Talk	Black Board
3.3	Normal probability plot – plot of residuals against estimated response.	5	Chalk & Talk	Black Board
3.4	A formal test for lack of fit of the model	5	Discussion	Black Board
UNIT 4 MULTICOLLINEARITY				
4.1	Multi collinearity: Meaning and sources – consequences of multi collinearity.	4	Chalk & Talk	Black Board
4.2	Test for detecting multi collinearity	3	Chalk & Talk	Black Board
4.3	Examining the correlation matrix	4	Chalk & Talk	Black Board
4.4	Variance Inflation factor	4	Chalk & Talk	Black Board
4.5	Eigen values of X ' X.	3	Chalk & Talk	Black Board
UNIT 5 AUTOCORRELATION				
5.1	Autocorrelation: Meaning of serial independence	5	Lecture	PPT & White board
5.2	Sources of autocorrelation	3	Lecture	PPT & White board
5.3	First order autoregressive scheme – consequences of autocorrelation	5	Lecture	PPT & White board
5.4	Durbin & Watson test – analysing the model in the presence of autocorrelation	5	Chalk & Talk	Black Board

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks	CIA Total	% of Assessmen

	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	
holastic	5
on Scholastic	5
	0

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

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

EVALUATION PATTERN

	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	Ability to perform analyses of economic data based on broad knowledge of the linear regression model	K3 & K4	PSO1
CO 2	Estimate and test regression model	K1 & K2	PSO5
CO 3	Assess the appropriateness of a linear regression model by defining residuals and examining the residual plot graphs	K3 & K4	PSO3
CO 4	Check the existence of multicollinearity in a data set can lead to less reliable results due to larger standard errors	K1 & K4	PSO5 &PSO6
CO 5	Articulate the null and alternative hypotheses for the Durbin-Watson (DW) test	K4	PSO5

Mapping COs Consistency with PSOs

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

Mapping COs Consistency with POs

CO/ PO	PO1	PO2	PO3	PO4
CO1	3	2	2	2
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. M. Mano Prabha**

Forwarded By

IIIB.Sc.STATISTICS

SEMESTER VI

Forthosewhojoinedin2019onwards

PROGRAMME CODE	COURSE CODE	COURSETITLE	CATEGORY	HRS/WEEK	CREDITS
USST	19ST6SB5	Practical Statistics IV	Lecture&Practical	2	2

COURSEDESCRIPTION

Thecourseprovidesanapplicationrelatedto statistical qualitycontrol,nonparametrictests&designofexperiments

COURSEOBJECTIVES

Toexposethestudentstotheanalysisofstatisticaltechniquesinreallifesituations.

1. ControlChartsforVariables-$\bar{X}$,Rchart
2. ControlChartsforAttributes-p,np,c-chart
3. Acceptance sampling for attributes – single sapling plan – OC, AOQ,ASNandATI
4. Acceptancesamplingforattributes–Double sampling plan – OC,AOQ,ASNandATIcurves
5. Non- Parametric tests - Sign test, Wilcoxon test, Mann-Whitney U test,Median test, Run test, Kolmogorov Smirnov one sample test, KruskalWallis
6. Anova–OnewayandTwoway
7. DesignofExperiment–CRD,RBD,LSD
8. MissingPlot
9. FactorialExperiment- experimentswithcompletelyconfounding
10. FactorialExperiment- $2^2 2^3$ experimentswithpartiallyconfounding. $2^2 2^3$

Levels	C1	C2	C3	C4	C5	TotalScholasticMarks	NonScholasticMarks C6	CIA Total	% ofAssessment
	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%
NonScholastic	-	-	-	-	-		5	5	12.5%
Total	10	10	5	5	5	35	5	40	100%

CIA	
Scholastic	35
NonScholastic	5
	40

- ✓ **ThelevelsofCIAAssessmentbasedonRevisedBloom'sTaxonomyare:**

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

EVALUATIONPATTERN

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

COURSEOUTCOMES

Onthesuccessfulcompletionofthecourse,studentswillbeableto:

NO.	COURSEOUTCOMES	KNOWLEDGE LEVEL(ACCORDINGTOREVISEDBLOOM'STAXONOMY)	PSOsADDRESSED
CO1	Analyzetheproblemsbasedonstatisticalqualitycontrol	K1&K3	PSO1&PSO2
CO2	Examine various non parametrictests	K1&K3	PSO1&PSO2
CO3	Apply and interpret the methods ofANOVA,factorialexperiments,CRD, RBDandLSD.	K2&K4	PSO5 &PSO 6

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
CO1	3	3	2	3
CO2	2	1	3	2
CO3	3	3	1	1

Note: ♦StronglyCorrelated–**3** ♦ModeratelyCorrelated–**2**

♦ WeaklyCorrelated-**1**

COURSEDESIGNER:

1. **Dr.P.Vetriselvi**
2. **Ms.D.K.PonOvyaFo**

rwardedBy

Dr.E.Helena

IIIB.Sc.STATISTICS

SEMESTER VI

Forthosewhojoinedin2019onwards

Entreprenuership-50%
&Employability-50%

PROGRAMME CODE	COURSE CODE	COURSETITLE	CATEGORY	HRS/WEEK	CREDITS
USST	19ST6SB6	Statistical Software –R	LectureandPractical	2	2

COURSEDESCRIPTION

Thecourseisintroducedtolearnaprogramminglanguagewhichhelpstohandleallaspectsofstatisticalsoftware.

COURSEOBJECTIVES

Toexposethestudentsontheapplicationsofstatisticalanalysisusingstatisticalpackage.

1. DiagrammaticRepresentationBarChart,PieDiagram
2. ConstructionofDiscreteandContinuousFrequencyTablesfromrawdata
3. GraphicalRepresentation-Histogram,Box-Whiskersplot
4. DescriptiveStatistics
5. Simplecorrelation,Rankcorrelation,
6. RegressionFittingofPoissondistribution
7. FittingofNormaldistribution
8. Parametrictests–Means,VariancesandProportions
9. Chi–squaretestforgoodnessoffit
10. Chi–squaretestforindependencesamples
11. Non- Parametric tests Sign test, Wilcoxon test, Mann-Whitney Utest, Median test, Run test, Kolmogorov Smirnov one sample test,KruskalWallis

12. ANOVA–onewayandtwoway

13. DesignofExperiment–CRD,RBD,LSD

14. FactorialExperiment- $2^2 2^3$ experimentswithtotalandpartialconfounding.

REFERENCEBOOKS:

1. SudhaPurohit,SharadDGoreandShailajaR.Deshmukh,NarosaPublishingHouse,NewDelhi(2015).
2. Jured.P.Lander,*R for everyone,advance Analyticsand Graphics*,Addison-Wesley,USA(2014).
3. OnlinehelpmanualsandothermaterialsavailableinRprojectsitewillformbasisforthecourse

Levels	C1	C2	C3	C4	C5	TotalScholasticMarks	NonScholasticMarks C6	CIA Total	% ofAssessment
	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%
NonScholastic	-	-	-	-	-		5	5	12.5%
Total	10	10	5	5	5	35	5	40	100%

CIA	
Scholastic	**35**
NonScholastic	**5**
	40

- ✓ **ThelevelsofCIAAssessmentbasedonRevisedBloom'sTaxonomyare:**

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

EVALUATIONPATTERN

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

COURSEOUTCOMES

Onthesuccessfulcompletionofthecourse,studentswillbeableto:

NO.	COURSEOUTCOMES	KNOWLEDGE LEVEL(ACCORDINGTOREVISEDBLOOM'STAXONOMY)	PSOsADDRESSED
CO1	ToimpartefficientDataHandlingTechniques	K1&K3	PSO1&PSO2
CO2	ToequipstudentstoStatisticalProgrammingSkillsbasedonexamplesanddatasets	K2&K4	PSO4 &PSO 5
CO3	AbletoexploreresultsusingANOVAandANOCOVA	K2&K4	PSO4 &PSO 5

MappingofC0swithPSOs

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

MappingofC0swithPOs

CO/ PSO	PO1	PO2	PO3	PO4
CO1				
CO2				
CO3				

Note: ♦StronglyCorrelated–**3** ♦ModeratelyCorrelated–**2**

♦ WeaklyCorrelated-**1**

COURSEDESIGNER:

1. **Dr.P.Vetriselvi**
2. **Ms.D.K.PonOvyaFo**

rwardedBy

Dr.E.Helena

DEPARTMENT OF STATISTICS

For those who joined in 2021 onwards

COURSE DESCRIPTION

This course is designed to make the students learn the concept of Differentiation

COURSE OBJECTIVES

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USST	22ST4SL2	Differential Equations			2

To enable the students understand the mathematical concepts required to learn statistics

UNIT-I: DIFFERENTIAL EQUATIONS OF FIRST ORDER FIRST DEGREE (6 Hrs.)

Variable Separable - Homogeneous equations – Non homogeneous equations of the first degree in x and y

UNIT-II: DIFFERENTIAL EQUATIONS OF FIRST ORDER - I (6 Hrs.)

` Linear equations – Bernoulli's equation – Exact differential equation

UNIT III: DIFFERENTIAL EQUATIONS OF FIRST ORDER - II (6 Hrs.)

Linear equations with constant coefficient with terms of the form e^{ax} V on RHS – Linear equations with variable coefficients

UNIT-IV: PARTIAL DIFFERENTIAL EQUATIONS (6 Hrs.) Formation of Partial Differential equations – First order Partial Differential Equations – Some standard forms

UNIT-V: APPLICATIONS (6 Hrs.)

Applications of first order equations: Growth, decay and chemical reactions.

TEXT BOOKS:

1. S.Narayanan, T.KManickavachagamPillay, Differential Equation and its Applications –. S. Viswanathan (Printers and Publishers) Pvt. Ltd.2006

REFERENCES:

1. S. Narayanan and T. K. Manickavachagam Pillai, Ancillary Mathematics Vol II, S. Viswanathan Printers& Publishers, 1996.

DIGITAL EDUCATIONAL OPEN RESOURCES:

https://www.khanacademy.org/math/differential-equations

https://www.youtube.com/watch?v=M9rcYTuFG4w

I B.Sc. STATISTICS

For those who joined in 2021 onwards

Skill Development-40% &Entreprenuership-60%

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USST	22ST2SL1	Quantitative Aptitude &Data Interpretation	Self Study		2

COURSE DESCRIPTION

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

COURSE OBJECTIVES

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

UNIT –I TABLES AND GRAPHS (6 HRS.)

Data Tables, Bar graphs, Line graphs, pie graphs

UNIT –II INTERPRETATION AND ANALYSIS OF DATA BASED ON TEXT

(6 HRS.)

Venn diagram, caselets data interpretations, histogram

UNIT –III PERMUTATION AND COMBINATION (6 HRS.)

Permutation - Combination

UNIT –IV STOCKS AND SHARES (6 HRS.)

Stock- capital, shareandshareholders, dividend, face valueand market value, brokerage

UNIT –V TRUE DISCOUNT, BANKER'S DISCOUNT (6 HRS.)

Present worth, true discount, banker‟s discount and banker‟s gain

TEXT:

R.S Aggarwal, Quantitative Aptitude, New Delhi, S.Chand and company Ltd, 2006, Chapters:

(Sections 21,22,29,32,33,36-39).

REFERENCES:

1. Eugene D.Jafle, GMAT (Graduates Management Admission Test), New Delhi-2, GalgotiaPublicationPvt.Ltd, 1996.
2. Samuel C.Brownstein, SAT (Scholastic Aptitude Test), New Delhi - 2, Galgotia Publications (P) Ltd, 1997.
3. Thomas H.Martinson, Super Course for the GMAT, New Delhi -2, Goyl Saab Publishers, 1998.

DIGITAL EDUCATIONAL OPEN RESOURCES:

https://pdf.exampundit.in/quantitative-aptitudehttps://www.ibpsguide.com/banking-insurance/quantitative-aptitude/

III B.Sc. STATISTICS

For those who joined in 2019 onwards

Entreprenuership-100%

)GRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USST	19UGSLST1	Official Statistics	Self Study	-	

COURSE DESCRIPTION

This paper gives an idea about various methods in which Statistics are being collected in different sectors Goal :

COURSE OBJECTIVES

To enable the students to understand how the statistics are collected, recorded and published

UNIT –I OFFICIAL STATISTICS

Official Statistics: Definition – Growth of Indian Statistics – Statistical organizations of India: Central Statistical Organisation (CSO) – Divisions of Central Statistical Organisation – Functions – Publications.

UNIT – II SURVEY ORGANISATION

National Sample Survey Organisation (NSSO) – Divisions of NSSO – Functions of NSSO – Procedure for collection of information – Agriculture Statistics, Yield Statistics – Official series: Traditional method, Random Sampling Method – NSS Series – Forest Statistics, Fisheries Statistics – Defects in agricultural Statistics.

UNIT – III NATIONAL INCOME

National income: Definition – Methods of estimating national income: The Income method, the Output method and the Expenditure method – Uses of National income estimates – Difficulties of estimation.

UNIT – IV SOCIAL ACCOUNTING

Social accounting – Population statistics – Sources – Different methods of collecting population census – Methods of enumeration – Merits and demerits of De Facto method, Merits and demerits of the De Jure system.

UNIT – V PRICE STATISTICS

Price Statistics: Wholesale prices, Retail prices, Uses and limitations of price statistics. Industrial Statistics: Main Sources of industrial Statistics – Limitations.

TEXT BOOK:

R.S.N. Pillai and V. Bagavathi (1995), Statistics, Third Edition, S. Chand & Company, New Delhi – 110 055.

REFERENCES:

1. Central Statistical Organization (2011), Statistical Systems in India, Department of Statistics, Ministry of Planning, New Delhi.
2. Goon, A.M. Gupta, M.K and Das Gupta, B.(1986), Fundamentals of Statistics, Volume II, The World Press Private Limited, Calcutta.

III B.Sc. STATISTICS

For those who joined in 2019 onwards

Entreprenuership-100%

)GRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USST	19UGSLST2	Bio Statistics	Self Study	-	

COURSE DESCRIPTION

This course covers the basic tools for the collection, analysis and presentation of data in all areas of public health.

COURSE OBJECTIVES

To enable the students describe the roles of biostatistics serves in public health and biomedical research

UNIT –I STUDY DESIGN

Introduction to study designs – Different types of observational studies – Experimental studies, Epidemiology – Odds – Odds ratio – Confidence interval for odds ratio – Relative risk

UNIT – II CHI-SQUARE TEST

Chi-Square test: Diagnostic Procedures with Threshold model.

Measuring the accuracy of diagnosis – Sensitivity, Specificity, ROC curve.

UNIT – III CLINICAL TRAILS

Clinical Trials: Introduction – Different Phases of Clinical Trials - Purpose – Duration Cost - Drug Regulatory Bodies

UNIT – IV SURVIVAL DISTRIBUTIONS

Survival Time, Survival Distributions- Hazard Function- Exponential

- Gamma – Type I and Type II Censoring, Progressive Censoring – Estimation of Parameters with Numerical Examples.

UNIT – V

Estimating Survival Function and Variance using Kaplan Meier Method – Comparison of Survival Distribution – Log Rank Test for Comparing Two Groups

TEXT BOOK:

Dawson, Beth & Robert, G (2001) ; Basic & Clinical Biostatistics,