Structure of Statistics Syllabus

Academic Year	Semester	Paper	Code
2018-19	I	Descriptive Statistics and Probability	ST 122
2018-19	II	Probability Distributions	ST222
2018-19	III	Statistical Methods and Inference-I	ST322
2018-19	IV	Statistical Inference II	ST422
2018-19	V	Applied Statistics-I	ST522
2018-19	V	SQC and Reliability	ST522A
2018-19	VI	Applied Statistics II	ST622
2018-19	VI	OPERATIONS RESEARCH	ST622A
2018-19	III	SEC-1: Data Analysis with R - I	SE322
2018-19	IV	SEC – 2 : Data Analysis with R - II	SE422
2018-19	V	SEC - 3: Data Analysis with SPSS-I	SE522
2018-19	VI	SEC - 4: Data Analysis with SPSS-II	SE622
2018-19	V	GE - 1: Data Analysis with Excel	GE522
2018-19	VI	GE – 2: Data Analysis with SPSS	GE622

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B.Sc. I year Semester I

Subject: Descriptive Statistics & Probability Paper code: ST122

Month	Sub Units	Topics to be covered	No.of classes per topic
		UNIT I	
J U N E	1	Types of collection of data	2
	2	Concept of Population and sample, quantitative and qualitative data	2
		UNIT I	
	1	Questionnaire and Schedule	1
	2	Tabulation and Classification	1
J	3	Univariate and bivariate Frequency distribution	2
U	4	Measurement of scales	1
L	5	Diagrammatic and Graphical presentation	2
Y		**UNIT II**	
	6	Introduction of Statistics	1
	7	Measures of Central Tendency	7
		UNIT II	
	1	Measures of dispersion	5
	2	Moments and their inter relation	3
	3	Skewness, Kurtosis & Sheppard's correction	2
A		**UNIT III**	
U	4	Introduction to Probability and basic concepts of probability	2
G	5	Simple theorems on Probability	2
U	6	Addition theorem for 2 and n events	1
S	7	Conditional Probability	2
T	8	Multiplication theorem for 2 and n events	1
	9	Simple problems	3
	10	Baye's theorem	2
	11	Boole's inequality	1
		UNIT IV	
	1	Definition of r.v. and types of r.v.	1
	2	Properties of distribuition function	1
S	3	Functions of r.v.	1
E	4	transformation of r.v.s	3
P	5	Mathematical Expectations introduction	1
T	6	Properties of mathematical expectations	2
E	7	Properties of variances	2
M	8	M.G.F. and its properties	1
B	9	P.G.F. and its properties	1
E	10	C.F. and its properties	1
R	11	C.G.F. and its properties	1
	12	Tscheby chev's inequality	3
	13	Cauchy Schwartz inequality	1
		TOTAL	62

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B.Sc. I year Semester II

Subject:Probability distributions **Paper code: ST222**

Month	Sub Units	Topics to be covered	No.of classes per topic
		UNIT I	
	1	Introdution to bivariate r.v. and notations	2
	2	Joint marginal and conditional distributions	2
	3	independence of random variables	1
NOVEMBER	4	Statement and applications of W.L.L.N.	2
	5	C.L.T. for i.i.d. r.v.s with finite variance	3
		UNIT II	
	6	Discrete Uniform distriubtion	1
	7	Bernouli distribution	1
		UNIT II	
	1	Binomial distribution	4
	2	Poisson distribution	5
DECEMBER	3	Negative Binomial distribution	3
	4	Geometric distribution	3
	5	Hyper geometric distribuiton	2
		UNIT III	
	1	Rectangular distribution	3
JANUARY	2	Normal distribution	9
		UNIT IV	
	3	Exponential distribution	3
	4	Gamma distribution of first kind	2
		UNIT IV	
	1	Gamma distribution of first kind	1
	2	Gamma distribution of second kind	3
FEB And MARCH	3	Beta distribution of first kind	2
	4	Beta distribution of second kind	2
	5	Cauchy distribution	4
	6	Revision	2
TOTAL			**60**

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B.Sc. II year Semester III

Subject: Statistical Methods and Inference - I **Paper code: ST322**

Month	Sub Units	Topics to be covered	No.of classes per topic
JUNE		**Unit I**	
	1	Fitting of Curves	5
	2	Theory of Attributes	8
JULY		**Unit II**	
	1	Correlation Coefficient	5
	2	Coefficient of determination	1
	3	Rank Correlation Coefficient	3
	4	Regression Analysis	7
AUGUST		**Unit III**	
	1	Basic concepts of sampling distribution	2
	2	Exact sampling distributions - t, F, $\chi 2$	4
	3	Relation b/w t & F and F & χ^2 distribution	2
	4	Theory of Estimatin basic definitions	2
	5	Unbiasedness and Consistency	6
SEPTEMBER		**Unit IV**	
	1	Efficiency, Sufficiency and Neyman's Factorization Theorem	5
	2	Methods of Estimation: MLE and MM	7
	3	Point Estimation, Interval Estimation and Confidence Limits	3
		TOTAL	**60**

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B.Sc. II year Semester IV

Subject: Staistical Inference - II **Paper code: ST422**

Month	Sub Units	Topics to be covered	No.of classes per topic
November		**UNIT - I**	
	1	Testing of hypothesis (Concept)	5
	2	NP lemma Theorem and its applications	10
December		**UNIT - II**	
	1	Large Sample Tests	15
January		**UNIT - III**	
	1	Small Sample Tests	13
	2	Order Statistics	2
February		**UNIT - IV**	
	1	Non parametric Tests	15
		TOTAL	**60**

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B.Sc. III year Semester - V

Subject:Applied statistics - I Paper code : ST522

Month	Sub Units	Topics to be covered	No.of classes per topic
June		**Unit III**	
	1	Time Series- Introduction	2
	2	Measurements of Trend	4
	3	Meaurement of Seasonal Indices	3
July		**Unit III**	
	4	Measurement of Seasonal Indices	2
		Unit IV	
	1	Index Numbers - Introduction	1
	2	Construction of Weighted, Un weighted Index Numbers	4
	3	Base Shifting, Splicing, Deflation and CLIN	3
	4	Indian Official Statistics	2
August		**Unit I**	
	1	Principles of sample survey	1
	2	Errors in sample survey	2
	3	Simple Random Sampling	9
September		**Unit II**	
	1	Stratified Random Sampling	6
	2	Systematic Random Sampling	6
		Total	45

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B.Sc. III year Semester - VI

Subject:Applied statistics -II Paper code : ST622

Month	Sub Units	Topics to be covered	No.of classes per topic
		Unit I	
November	1	ANOVA- Introduction	2
	2	One way classification	5
	3	Two way classification	5
		Unit II	
December	1	Design of Experiment- Introduction	2
	2	Completely Randomized Design	3
	3	Randomised Block Design	3
	4	Latin square Design	4
		Unit III	
January	1	Vital statitics- Introduction	2
	2	Firtility Rate, Mortality Rate and Population Growth	7
	3	Life Table	4
		Unit IV	
February	1	Demand Analysis- Introduction	1
	2	Price elasticity of Supply, Demand	3
	3	Leontif's Method and Pigous Method	4
	4	Pareto's Law of Income distribution	2
		Total	45

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B.Sc. III year Semester - V

Subject:Statistical Quality Control & Reliability Paper code : ST522A

Month	Sub Units	Topics to be covered	No.of classes per topic
		Unit I	
June	1	SQC - Introduction	2
	2	Process Control	1
	3	x-bar and R chart	2
	4	x-bar and S-chart	2
		Unit I	
July	5	No.of defective chart	2
	6	No.of defects chart	2
	7	Proportion defective chart	2
		Unit II	
	1	Acceptance Sampling Plan	3
		Unit II	
August	2	Single Sampling Plan	6
	3	Double Sampling Plan	6
		Unit IV	
September	1	Reliability Theory	9
		Unit III	
	1	Six-Sigma	8
		Total	45

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B.Sc. III year Semester - VI

Subject:Operations Research Paper code : ST622A

Month	Sub Units	Topics to be covered	No.of classes per topic
November		**Unit I**	
	1	Formulation of Linear Programming Problem	2
	2	Graphical Solutions	3
	3	Simplex Method	3
December		**Unit I**	
	4	Big -M Method	3
	5	Two Phase Method	2
		Unit II	
	1	Duality	6
January		**Unit II**	
	2	Dual Simplex Method	6
		Unit III	
	1	Transportation Problem	6
February		**Unit III**	
	2	Transhipment Problem	4
		Unit IV	
	1	Assignment Problem	6
	2	Sequencing Problem	4
		Total	45

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B.Sc. II year Semester - III

Subject:Data Analysis with R - I Paper code : SE322

UNIT NO.	SUB UNIT	TOPICS	PERIODS PER SUBUNIT	TOTAL PERIODS
UNIT1				
JUNE	1	Introduction, Overview and History of R, Downloading and Installing R	2	15
	2	Getting Help, Writing Code/Setting Working Directory	2	
JUNE & JULY	3	Data types, Reading data from external sources, storing data to external files	6	
	4	Simple mathematical operations(addition, subtraction, multiplication, division, log x, ex, inverse).	5	
UNIT2				
AUG	5	Measures of Central Tendency, Measures of dispersions	4	15
	6	Diagrams and Graphs, Box plot and Scatter plot.	3	
SEP	7	Generation of Random number, Fitting of Binomial distribution	4	
	8	Fitting of Poisson and Normal distribution.	4	
		TOTAL	30	30

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B.Sc. II year Semester - IV

Subject:Data Analysis with R - II Paper code : SE422

UNIT NO.	SUB UNIT	TOPICS	PERIODS PER SUBUNIT	TOTAL PERIODS
UNIT1				
NOV	1	Write a code and program for Fitting of Bernouli, Binomial distribution.	5	15
	2	Fitting of a Poison and Normal distribution.	4	
DEC	3	Computation of Correlation co-efficient	3	
	4	Simple Regression lines and forecast.	3	
UNIT2				
JAN	5	Test for Proportion(s), Mean(s), S.D.(s) for Large samples	4	15
	6	t-test for single mean, difference of means(independent and dependent samples)	4	
FEB	7	Chi-square test for goodness of fit, independent of attributes and single variance	5	
	8	F-test for difference of variances.	2	
		TOTAL	30	30

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B.Sc. III year Semester - V

Subject:Data Analysis with SPSS - I Paper code : SE522

UNIT NO.	SUB UNIT	TOPICS	PERIODS PER SUBUNIT	TOTAL PERIODS
UNIT1				
JUNE	1	Introduction to SPSS Editor.	2	15
	2	general aspects, work flow, Entering data into SPSS	4	
JULY	3	Inserting and defining variables, Data entry, Data Editor	5	
	4	Sorting, Transposing, Splitting and Merging.	4	
UNIT2				
AUG	5	Frequency tables, using frequency tables for analyzing data (Central tendency).	4	15
	6	Frequency tables, using frequency tables for analyzing data (Dispersion)	4	
SEP	7	Chart builder, Histograms, line Charts, Bar Charts	3	
	8	Box plots, Error bar, Pie Charts, Scatter Plots (Simple, grouped, drop-line), Editing graphs and Axes.	4	
		TOTAL	30	30

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B.Sc. III year Semester - VI

Subject:Data Analysis with SPSS - II Paper code : SE622

UNIT NO.	SUB UNIT	TOPICS	PERIODS PER SUBUNIT	TOTAL PERIODS
UNIT1				
NOV	1	Sample and Population, Concept of confidence Interval	2	15
	2	F-test	2	
DEC	3	t-test (one sample, Independent sample, Paired sample)	4	
	4	ANOVA- GLM 1	2	
	5	Cross tabulation and Chi Square analysis.	5	
UNIT2				
JAN	6	Pearson's Correlation and Spearman Correlation, Scatter plots	4	15
	7	Linear Regression , Multiple Regression (Linear) and Simple examples	4	
FEB	8	Construction of variable and attribute charts.	4	
	9	Time Series Analysis	3	
		TOTAL	30	30

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Subject:Data Analysis with Excel Paper code : GE522

UNIT NO.	SUB UNIT	TOPICS	PERIODS PER SUBUNIT	TOTAL PERIODS
UNIT1				
JUNE	1	Introduction, Entering data into MS Excel, Inserting and defining variables, Data entry.	2	15
	2	Histograms, line Charts, Bar Charts, Pie Chart.	4	
JULY	3	Frequency tables, using frequency tables for analyzing data (Central tendency).	5	
	4	Frequency tables, using frequency tables for analyzing data (Dispersion).	4	
UNIT2				
AUG	5	Pearson's Correlation and Spearman Rank Correlation, Scatter plots	4	15
	6	Linear Regression , Multiple Regression (Linear) and Simple examples	4	
SEP	7	Fitting of Straight line, Second degree Parabola	3	
	8	Fitting of Power curve and Exponential curves.	4	
		TOTAL	30	30

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Subject:Data Analysis with SPSS Paper code : GE622

UNIT NO.	SUB UNIT	TOPICS	PERIODS PER SUBUNIT	TOTAL PERIODS
UNIT1				
NOV	1	Introduction, Entering data into SPSS Editor, Inserting and defining variables, Data entry.	2	15
	2	Chart builder, Histograms, line Charts, Bar Charts	4	
DEC	3	Box plots, Error bar, Pie Charts	4	
	4	Scatter Plots (Simple, grouped, drop-line), Editing graphs and Axes.	5	
UNIT2				
JAN	5	Frequency tables, using frequency tables for analyzing data (Central tendency and dispersion).	4	15
	6	Pearson's Correlation and Spearman Rank Correlation	4	
FEB	7	Scatter plots, Linear Regression , Multiple Regression (Linear) and Simple examples.	4	
	8	Simple forecasting techniques.	3	
		TOTAL	30	30