

# STATISTICS

## NIZAM COLLEGE : DEPARTMENT OF STATISTICS

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester I)

Class : B. Sc (M.S.CS) I Year

Section:

STATISTICS

Course/Paper: I- (Basic Statistics And Theory of Probability)

Unit I : Descriptive Statistics

No. of Hours Allotted: 16

Topics to be covered	No. of Hours
Concept of primary and secondary data. Methods of collection and editing of Primary data.	1
Designing a questionnaire and schedule. Sources and editing of Secondary Data	1
Measures of Central tendency ( Mean, Median and Mode and their simple applications)	2
Geometric Mean and Harmonic Mean and their simple applications	2
Absolute and relative measures of dispersion (range, Quartile deviation, mean deviation and standard deviation) with simple applications	3
Importance of moments, central and non central moments and their interrelationships, Sheppard's corrections for moments for grouped data,	4
Measures of skewness based on Quartiles and moments and kurtosis based on moments with real examples	2
	<b>16</b>

Unit II : Probability

No. of Hours Allotted: 15

Topics to be covered	No. of Hours
Basic Concepts in Probability- deterministic and random experiments	2
Trail, outcome, sample space, event and operations of events, mutually exclusive events and exhaustive events, equally likely and favorable outcomes with examples,	3
Mathematical, Statistical and axiomatic definitions of probability with merits and demerits, Properties of probability based on axiomatic definition	3
Conditional Probability and independence of events	3
Addition and Multiplication Theorems for n events, Boole's inequality and Baye's theorem with examples	4
	<b>15</b>

**Unit III: : Random Variables****No. of Hours Allotted: 13**

<b>Topics to be covered</b>	<b>No. of Hours</b>
Definition of random variable, discrete and continuous variables, functions of random variables	2
Probability mass function and Probability Density functions with illustrations	3
Distribution function and its properties	1
Transformation of one dimensional random variable ( Simple 1-1 functions only)	3
Notion of bivariate random variable , bivariate distribution and statement of its properties, Joint, marginal and conditional distributions, Independence of random variables	4
	<b>13</b>

**Unit IV: : Mathematical Expectation****No. of Hours Allotted: 12**

<b>Topics to be covered</b>	<b>No. of Hours</b>
Mathematical expectation of a function of a random variable	1
Raw and central moments and covariance using mathematical expectation with examples	3
Addition and Multiplication Theorems of Expectations	2
Definition of Moment Generating Function( m.g.f ), cumulant Generating Function ( c.g.f )	3
Probability Generating Function ( p.g.f) and Characteristic Function (c.f) and statement of their properties with applications	3
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Statistics

Head, Department of

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LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester II)

**Class :** B. Sc (M.S.CS) I Year

**Section:**

STATISTICS

**Course/Paper:** II- (Distribution Theory)

**Unit I :** Discrete Distribution I

**No. of Hours Allotted:** 15

<b>Topics to be covered</b>	<b>No. of Hours</b>
Chebychev's and Cauchy-Schwartz's inequalities and their applications	2
Uniform, Bernoulli distributions	1
Binomial distribution	3
Poisson distribution	3
Negative Binomial distribution	4
Geometric distribution	1
Hyper geometric distribution (Mean and Variance only)	1
	<b>15</b>

**Unit II:** Discrete Distribution II  
**Allotted:** 15

**No. of Hours**

<b>Topics to be covered</b>	<b>No. of Hours</b>
Properties of the above distributions such as m.g.f, c.g.f, p.g.f, c.f and moments up to fourth order and their real life applications	8
Reproductive property where ever exists	3
Poisson approximation to Binomial distribution	1
Binomial approximations to Hyper Geometric distribution	1
Poisson approximation to Negative Binomial distribution	2
	<b>15</b>

**Unit III: : Continuous Distributions I****No. of Hours Allotted: 13**

<b>Topics to be covered</b>	<b>No. of Hours</b>
Rectangular and Normal Distributions	6
Normal distribution as a limiting case of Binomial and Poisson distributions	3
Exponential Distribution	1
Gamma Distribution	1
Beta of two kinds Distributions ( mean and variance only)	1
Cauchy Distribution ( definition and c.f only)	1

**Unit IV: : Continuous Distributions II****No. of Hours Allotted: 12**

<b>Topics to be covered</b>	<b>No. of Hours</b>
Properties of these distributions of unit III such as m.g.f, c.g.f, c.f and moments up to fourth order, and their real life applications	8
Reproductive property wherever exists	2
Statement and applications of Weak law of large numbers	1
central limit theorem for identically independently distributed (iid) random variables with finite variance	1
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LESSON PLAN FOR THE ACADEMIC YEAR 2017-2018 (Semester III)

**Class :** B.Sc (M.S.CS)

**Section:** Statistics

**Course/Paper III: Statistical Methods and Theory of Estimation**

**Unit: I**

**No. of Hours Allotted: 15**

<b>Topics to be covered</b>	<b>No. of Hours</b>
Population correlation coefficient and its properties	1
Bivariate data scattered Diagram	2
sample correlation coefficient, computation of correlation coefficient for grouped data	2
correlation ratio	1
spearman's rank correlation coefficient and its properties	2
Principle of least squares, simple linear regression	2
correlation verses regression, properties of regression coefficients	2
Fitting of quadratic and power curves	3
	<b>15</b>

**Unit: II**

**No. of Hours Allotted: 15**

<b>Topics to be covered</b>	<b>No. of Hours</b>
Concepts of partial correlation coefficients(only for three variables)	2
Concepts of multiple correlation coefficients(only for three variables)	3
Analysis of categorical data	2
independence and association, partial association of attributes	2
various measures of association(Yule's) for two way data	2
coefficient of contingency(Pearson and Tcherprow)	2
coefficient of colligation	2
	<b>15</b>

**Unit: III****No. of Hours Allotted: 14**

<b>Topics to be covered</b>	<b>No. of Hours</b>
Concepts of population, parameter, random sample, statistic, sampling distribution	1
standard error of sample mean(s) and sample proportion(s)	1
exact sampling distributions-statement and properties of Chi-square	3
t and F Distributions and their inter relationships	2
Independence of sample mean and variance in random sampling from normal distributions	2
Point estimation of a parameter, concept of bias and mean square error of an estimate	1
Criteria of a good estimator .consistency, unbiasedness	1
Efficiency with examples	1
Sufficiency with examples	<b>2</b>

**Unit: IV****No. of Hours Allotted: 12**

<b>Topics to be covered</b>	<b>No. of Hours</b>
Statement of Neyman's factorization theorem, derivations of sufficient statistics in case of Binomial, poisson, normal and exponential (one parameter only) distributions	5
Estimation by method of moments	2
Maximum likelihood (ML), statements of asymptotic properties of MLE	3
concept of Interval estimation, confidence intervals of the parameters of the normal population by pivot method	2
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LESSON PLAN FOR THE ACADEMIC YEAR 2017-2018 (Semester III)

**Class :** B.Sc ( M.S.CS)

**Section:**

**Course/Paper:** IV Statistical Inference

**Unit: I**

**No. of Hours Allotted: 14**

<b>Topics to be covered</b>	<b>No. of Hours</b>
Concepts of statistical hypotheses, null and alternative hypothesis	1
critical region, two types of errors, level of significance and power of a test	3
One tailed and two tailed tests, test function (non randomized and randomized)	4
Neyman-Pearson's fundamental lemma for randomized tests	3
Examples in case of Binomial, Poisson, Exponential and Normal distributions and their powers	3
	<b>14</b>

**Unit: II**

**No. of Hours Allotted: 14**

<b>Topics to be covered</b>	<b>No. of Hours</b>
Large sample tests: use of central limit theorem in testing	2
Large sample tests for mean(s)	2
Large sample tests for proportion(s)	2
Large sample tests for standard deviation(s)	2
Large sample tests for correlation coefficient(s)	2
confidence intervals for mean(s), proportion(s), standard deviation(s), and correlation coefficient(s)	4
	<b>14</b>

**Unit:III**  
**Allotted: 14**

**No. of Hours**

<b>Topics to be covered</b>	<b>No. of Hours</b>
Tests of significance based on chi square	2
Tests of significance based on t statistic	2
Tests of significance based on F statistic	2
Chi square test for goodness of fit	3
Chi square test for independence of attributes	3
Definition of order statistics and statement of their distribution with simple examples	2
	<b>14</b>

**Unit:IV**  
**Allotted: 14**

**No. of Hours**

<b>Topics to be covered</b>	<b>No. of Hours</b>
Nonparametric tests-their advantages and disadvantages, comparison with parametric tests	1
Measurement Scale-nominal, ordinal, interval and ratio	2
One sample runs tests, sign test	2
Wilcoxon-signed rank tests (single and paired samples)	2
Wilcoxon-signed rank test for two independent samples	2
Median test	1
Wilcoxon-Mann-Whitney U test	2
Wald Wolfowitz run test	2
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**NIZAM COLLEGE : DEPARTMENT OF STATISTICS**

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester IV)

**Class :** B.Sc (M.S.CS)

**Section:** Statistics

**Course/Paper:** V ( Design of Sample Surveys and Time Series analysis)

**Unit:** I

**No. of Hours Allotted:** 11

<b>Topics to be covered</b>	<b>No. of Hours</b>
Concepts of population, sample, sampling unit, parameter, statistic, sample frame and standard error	1
Principal steps in sample surveys - need for sampling, census versus sample surveys	1
sampling and non- sampling errors	1
sources and treatment of non-sampling errors	1
advantages and limitations of sampling	1
Types of sampling: Subjective, probability and mixed sampling methods	1
Methods of drawing random samples with and without replacement	1
Estimates of population mean, total, and proportion, their variance of the estimators by SRSWR	2
Estimates of population mean, total, and proportion, their variance of the estimators by SRSWOR	2
	<b>11</b>

**Unit: II****No. of Hours Allotted: 10**

<b>Topics to be covered</b>	<b>No. of Hours</b>
Estimates of population mean, total, and proportion by Stratified random sampling	2
variance of the estimators by Stratified random sampling	3
Stratified random sampling with proportional allocation	3
Stratified random sampling with Optimum allocation	2
	<b>10</b>

**Unit: III****No. of Hours Allotted: 11**

<b>Topics to be covered</b>	<b>No. of Hours</b>
Estimates of population mean, total, and proportion and variance of the estimators by Systematic sampling with $N=nk$	4
Comparison of their relative efficiencies.	3
Advantages and disadvantages of the above methods of sampling	4
	<b>11</b>

**Unit: IV****No. of Hours Allotted: 10**

<b>Topics to be covered</b>	<b>No. of Hours</b>
Time series and its components with illustrations	1
Additive, multiplicative and mixed time series models	1
Determination of trend by least squares	1
Determination of trend by moving average method.	1
Growth curves and their fitting with reference to Modified exponential curves	2
Growth curves and their fitting with reference to Gompertz curves	2
Growth curves and their fitting with reference to Logistic curves.	2
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**NIZAM COLLEGE : DEPARTMENT OF STATISTICS**

LESSON PLAN FOR THE ACADEMIC YEAR 2017-2018 (Semester V)

**Class :** B.Sc(M.S.CS)

**Section:** Statistics

**Course/Paper:** VI ( a) (Operations Research, Vital and Indian official statistics)

**Unit:** I

**No. of Hours Allotted:** 11

<b>Topics to be covered</b>	<b>No. of Hours</b>
Meaning and scope of OR. Convex sets and their properties. Definition of general LPP	2
Formulation of LPP. Solution of LPP by graphical method	1
Fundamental theorem of LPP. Simplex algorithm	2
Concept of artificial variables. Big -M /Penalty method	2
Two-phase simplex method of solving LPP	2
Concept of degeneracy and resolving it	1
Concept of duality, duality as LPP. Dual Primal relationship	1
	<b>11</b>

**Unit:** II

**No. of Hours Allotted:** 10

<b>Topics to be covered</b>	<b>No. of Hours</b>
Definition of transportation problem, TP as a special case of LPP	1
Initial basic feasible solutions by North-West Corner Rule, Matrix minimum methods	1
VAM of obtaining initial basic feasible solution to TP	1
Optimal solution through MODI tableau	2
stepping stone method for balanced and unbalanced transportation problem.	2
Degeneracy in TP and resolving it.	2
Concept of Transshipment problem.	1
	<b>10</b>

**Unit: III****No. of Hours Allotted: 11**

<b>Topics to be covered</b>	<b>No. of Hours</b>
Formulation and description of Assignment problem and its variations	1
Assignment problem as special case of TP and LPP.	1
Unbalanced assignment problem	2
Traveling salesman problem.	1
Optimal solution using Hungarian method	2
Problem of Sequencing: Optimal sequence of N jobs on two machines without Passing.	2
Problem of Sequencing: Optimal sequence of N jobs on three machines without Passing.	2
	<b>11</b>

**Unit: IV****No. of Hours Allotted: 11**

<b>Topics to be covered</b>	<b>No. of Hours</b>
Rates and ratios in vital statistics	2
standardized rates	2
construction and uses of complete life tables	2
construction and uses of Abridged life tables	2
Functions and organization of CSO and NSSO	1
Agricultural Statistics, area and yield statistics	1
National Income and its computation, utility and difficulties in estimation of national income.	1
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**NIZAM COLLEGE : DEPARTMENT OF STATISTICS**

LESSON PLAN FOR THE ACADEMIC YEAR 2017-2018 (Semester V)

**Class :** B.Sc (M.S.CS)

**Section:** Statistics

**Course/Paper:** VII (Designs of Experiments and Index Numbers)

**Unit:** I

**No. of Hours Allotted:** 11

<b>Topics to be covered</b>	<b>No. of Hours</b>
Concept of Gauss-Mark off linear model with examples, statement of Cochran's theorem Statistical analysis	2
ANOVA – one-way classifications Expectation of various sums of squares,	1
ANOVA – two-way classifications Expectation of various sums of squares,	2
Importance and applications of design of experiments.	2
Principles of experimentation	2
	<b>11</b>

**Unit:** II

**No. of Hours Allotted:** 11

<b>Topics to be covered</b>	<b>No. of Hours</b>
Analysis of Completely randomized Design (C.R.D).	2
Analysis of Randomized Block Design (R.B.D)	2
Completely randomized Design (C.R.D)including one and two missing observation	2
Randomized Block Design (R.B.D) including one and two missing observation	2
Expectation of various sum of squares in C.R.D	1
Expectation of various sum of squares in R.B.D	1
Comparison of the efficiencies of above designs.	1
	<b>11</b>

**Unit-III****No. of Hours Allotted: 10**

<b>Topics to be covered</b>	<b>No. of Hours</b>
Analysis of Latin Square Design (L.R.D).	2
Analysis of Latin Square Design (L.R.D) with one missing observation estimated	1
Analysis of Latin Square Design (L.R.D) with two missing observations estimated	1
Expectation of various sum of squares.	2
Comparison of the efficiencies	2
Analysis of $2^2$ factorial design. Estimates of main effects and interaction effects	1
Yate's table for computation of F.	1
	<b>10</b>

**Unit-IV****No. of Hours Allotted: 10**

<b>Topics to be covered</b>	<b>No. of Hours</b>
Concept, construction, uses and limitations of simple and weighted index numbers	2
Laspeyer's, Paasche's and Fisher's index numbers	1
criterion of a good index numbers, Fisher's index as ideal index number	2
problems involved in the construction of index numbers	1
Fixed and chain base index numbers	1
Cost of living index numbers and wholesale price index numbers	1
Base shifting, splicing and deflation of index numbers	2
	<b>10</b>

**NIZAM COLLEGE : DEPARTMENT OF STATISTICS**

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester IV)

**Class :** B.Sc (M.S.SC)

**Section:** Statistics

**Course/Paper:** VIII (a) Demand Analysis, SQC and Reliability

**Unit:** I

**No. of Hours Allotted:** 10

<b>Topics to be covered</b>	<b>No. of Hours</b>
Introduction. Demand and supply	2
price elasticity of supply .	2
price elasticity of demand.	3
Methods of determining demand and supply curves	3
	<b>10</b>

**Unit:** II

**No. of Hours Allotted:** 11

<b>Topics to be covered</b>	<b>No. of Hours</b>
Time series data. Leontief's methods of determining demand curve from time series data, limitations of the method.	3
,Pigous's methods of determining demand curve from time series data	2
Pareto law of income distribution curves of concentration	3
Lorenz curve, Gini's coefficient	3
	<b>11</b>

**Unit: III**

**No. of Hours Allotted: 10**

<b>Topics to be covered</b>	<b>No. of Hours</b>
Importance of SQC in industry. Statistical basis of Shewart control charts. Interpretation of control charts.. Interpretation of control charts.	2
Construction of control charts for variables (mean, range and standard deviation).	2
Construction of control charts for attributes (p, np, and c- charts with fixed sample sizes)	3
Construction of control charts for attributes (p, np, and c- charts with varying sample sizes)	2
Natural tolerance limits and specification limits, process capability index. Concept of Six sigma and its importance	1
	<b>10</b>

**Unit: IV**

**No. of Hours Allotted: 12**

<b>Topics to be covered</b>	<b>No. of Hours</b>
Concept of AQL and LTPD. Producers risk and consumer's risk..	1
Single sampling plan for attributes and their OC and ASN functions	1
Double sampling plans for attributes and their OC and ASN functions	2
Design of single sampling plan for attributes using Binomial and Poisson distributions	2
Design of double sampling plan for attributes using Binomial and Poisson distributions	2
Introduction. Hazard function, Exponential distribution as life model, its memory less property.	1
Introduction. Hazard function, Exponential distribution as life model, its memory less property.	1
Reliability function and its estimation. System reliability - series, parallel systems and their reliabilities.	1
Reliability function and its estimation. System reliability - series k out of N systems and their reliabilities.	1
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**NIZAM COLLEGE : DEPARTMENT OF STATISTICS**

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester I)

**Class :** B.Sc (M.S.SC)

**(Practicals)**

**Section:** Statistics

**Course/Paper: P-I**

**No. of Hours Allotted: 24**

<b>Topics to be covered</b>	<b>No. of Hours</b>
Basics of Excel- Data entry, editing and saving, establishing and copying formulae, built in functions in Excel, copy and paste and exporting of MS word document.	2
Graphical representation of data( Histogram, Frequency polygon, Ogive curves)	3
<b>Graphical representation of data( Histogram, Frequency polygon, Ogive curves) using MS-Excel</b>	3
Diagrammatic representation of data( Bar and Pie)	2
<b>Diagrammatic representation of data( Bar and Pie) using MS Excel</b>	3
Computation of Central and Non central moments- Sheppard's correction for grouped data	3
Computation of Karl Pearson's and Bowley's Coefficient of Skewness and Kurtosis- $\beta_1$ and $\beta_2$	4
Computation of Measures of central tendency and dispersion, Coefficients of Skewness and Kurtosis using MS Excel	4
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**NIZAM COLLEGE : DEPARTMENT OF STATISTICS**

LESSON PLAN FOR THE ACADEMIC YEAR 2017-2018 (Semester II)

**Class :** B.Sc (M.S.SC)

**(Practicals)**

**Section:** Statistics

**Course/Paper: P-II**

**No. of Hours Allotted: 24**

<b>Topics to be covered</b>	<b>No. of Hours</b>
Fitting of Binomial distribution- Direct method and Recurrence method	3
<b>Fitting of Binomial distribution(Direct method) using MS Excel</b>	2
Fitting of Poisson distribution- Direct method and Recurrence method	3
<b>Fitting of Poisson distribution(Direct method) using MS Excel</b>	1
Fitting of Negative Binomial distribution	2
Fitting of Geometric distribution	1
Fitting of Hyper Geometric distribution	1
Fitting of Normal distribution using Areas method and ordinates method	6
Fitting of Exponential distribution	1
<b>Fitting of Exponential distribution using MS-Excel</b>	1
Fitting of Cauchy distribution	1
<b>Fitting of Cauchy distribution using MS-Excel</b>	1
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LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester III)

**Class :** B.Sc (M.S.SC)

**(Practicals)**

**Section:** Statistics

**Course/Paper:** P-III

**No. of Hours Allotted:** 24

Topics to be covered	No. of Hours
Generation of random sample from uniform(0,1), uniform (a,b), exponential, Normal and Poisson distributions	3
<b>Simulation of random samples from Uniform(0,1), Uniform(a,b), Exponential Normal and Poisson distributions using MS- Excel.</b>	2
Fitting of a straight line and parabola, power curves of the type $y=ax^b$ and exponential curves $y=ab^x$ and $y=ae^{bx}$ by method of least squares.	5
<b>Fitting of a straight line and parabola, power curves of the type <math>y=ax^b</math> and exponential curves <math>y=ab^x</math> and <math>y=ae^{bx}</math> by method of least squares using MS-Excel.</b>	3
Computation of Yule's coefficient of association, Pearson's Tcherprows coefficient of contingency	2
Computation of correlation coefficient, forming regression lines for grouped and ungrouped data	2
<b>Computation of correlation coefficient, forming regression lines using MS-Excel</b>	2
Computation of Multiple and partial correlation coefficient	2
<b>Computation of Multiple and partial correlation coefficient using MS-Excel</b>	1
Computation of correlation ratio.	2
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LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester IV)

**Class :** B.Sc (M.S.SC)

**(Practicals)**

**Section:** Statistics

**Course/Paper: P-IV**

**No. of Hours Allotted: 24**

<b>Topics to be covered</b>	<b>No. of Hours</b>
Large sample test for mean(s), proportion(s), standard deviation(s) and correlation coefficient.	3
Small sample test for single mean and difference of means and correlation coefficient. Paired t-test	2
<b>Small sample test for single mean and difference of means and correlation coefficient using MS-Excel.</b>	3
Small sample test for single variance and difference of variances	1
<b>Small sample test for single variance and difference of variances using MS-Excel</b>	2
Chi-square test for goodness of fit and independence of attributes	3
<b>Chi-square test for goodness of fit and independence of attributes using MS-Excel</b>	3
Non parametric tests for single and related samples (Sign test and Wilcoxon-signed rank test) and one sample run test.	3
Non parametric tests for two independent samples (Median test, Wilcoxon-Mann-Whitney U test, Wald Wolfowitz run test)	4
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**NIZAM COLLEGE : DEPARTMENT OF STATISTICS**

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester V)

**Class :** B.Sc (M.S.SC)

**(Practicals)**

**Section:** Statistics

**Course/Paper:** P-V

**No. of Hours Allotted:** 24

<b>Topics to be covered</b>	<b>No. of Hours</b>
Formulation and graphical Solution of L.P. problem ( using different inequality type constraints)	1
Solution of L.P. problem by simplex method, Big-M and two-phase simplex method.	4
IBFS for a transportation problem by North-West corner rule, Matrix minimum method and Vogle's approximation method.	3
Optimum solution to balanced and unbalanced transportation problem by MODI method.	2
Solution of balanced and unbalanced Assignment problem using Hungarian method (Both maximization and minimization type),Solution of Traveling salesman problem.	2
Solution of sequencing problem- Processing of n jobs through two machines and three machines.	1
Computation of various mortality rates, fertility rates and Reproductive rates.	1
Construction of Life tables and Abridged life tables	1
Estimation of Population mean, population total and variance of these estimates by using Simple random sampling with and without replacement. Comparison between SRSWR and SRSWOR.	1
Estimation of Population mean, population total and variance of these estimates by using Stratified random sampling with proportional and optimum allocations. Comparison between proportional and optimum allocations with SRSWOR.	2
Estimation of Population mean, population total and variance of these estimates by using Systematic sampling with $N = nk$ . Comparison of Systematic sampling with Stratified and SRSWOR	2
Measurement of trend by method of least squares and moving averages.	2
Determination of seasonal indices by the method of Ratio to moving averages, Ratio to trend and link Relatives.	2
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**NIZAM COLLEGE : DEPARTMENT OF STATISTICS**

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester V)

**Class :** B.Sc (M.S.SC)

**(Practicals)**

**Section:** Statistics

**Computer Lab**

**Course/Paper:** P-VI

**No. of Hours Allotted:** 24

<b>Topics to be covered</b>	<b>No. of Hours</b>
Solution of L.P. problem by simplex method using TORA.	3
Solution of L.P. problem by Big-M and two-phase simplex method using TORA.	2
Optimum solution transportation problem using North-West corner rule, Matrix minimum method and Vogle's approximation method for IBFS using TORA.	3
Solution of Assignment problem for both maximization and minimization using TORA.	1
Construction of various rates, life tables and abridged life tables using MS-Excel.	2
Measurement of trend by method of least squares and moving averages using MS-Excel.	1
Determination of seasonal indices by the method of Ratio to moving averages, Ratio to trend and link Relatives using MS-Excel.	1
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**NIZAM COLLEGE : DEPARTMENT OF STATISTICS**

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester VI)

**Class :** B.Sc (M.S.SC)

**(Practicals)**

**Section:** Statistics

**Course/Paper:** P-VII

**No. of Hours Allotted:** 24

<b>Topics to be covered</b>	<b>No. of Hours</b>
Analysis of Variance one-way with equal number of observations	1
Analysis of Variance two-way with equal number of observations	1
Analysis of CRD, analysis of RBD with and without missing observations	4
Analysis of LSD with and without missing observations	3
Comparison of relative efficiency of CRD with RBD and Comparison of relative efficiency of LSD with RBD and CRD	2
Computation of simple and all weighted indices. Computation of time reversal test	1
Computation of Cost of living index number and whole sale index numbers	1
Computation of fixed base and chain base index numbers, Base shifting, splicing and Deflation	3
Construction of Lorenz curve, Fitting of Pereto's law of an income data.	2
Construction of Mean, range and Standard deviation - charts.	2
Construction of p, np and C charts with fixed and varying n	2
Designing a single and double sampling plans for attributes and construction of its OC and ASN curves	2
	<b>24</b>

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**NIZAM COLLEGE : DEPARTMENT OF STATISTICS**

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester VI)

**Class :** B.Sc (M.S.SC)

**(Practicals)**

**Section:** Statistics

**Computer Lab**

**Course/Paper:** P-VIII

**No. of Hours Allotted:** 24

<b>Topics to be covered</b>	<b>No. of Hours</b>
Analysis of Variance one-way with equal number of observations using MS-Excel.	1
Analysis of Variance two-way with equal number of observations using MS-Excel	1
Analysis of CRD, analysis of RBD with and without missing observations using MS-Excel	4
Analysis of LSD with and without missing observations using MS-Excel	3
Computation of all weighted indices, Cost of living index number, Base shifting, splicing and Deflation using MS-Excel.	4
Construction of Lorenz curve using MS-Excel	2
Construction of Mean, range and standard deviation - charts using MS-Excel	3
Construction of p, np and C charts with fixed and varying n using MS-Excel	4
Construction of OC and ASN curves for single and double Sampling plan using MS-Excel.	2
	<b>24</b>

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**NIZAM COLLEGE : DEPARTMENT OF STATISTICS**

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester V)

**Class :** B.Sc (M.S.SC)

**Section:** Statistics

**Course/Paper:** P-VI(b) (Econometric Methods)

**No. of Hours Allotted:** 56

**UNIT-I**

Topics to be covered	No. of Hours
Nature of Econometrics – Model building – Role of econometrics	16
Multiple regression	16
Polynomial regression, Estimation of the parameter, Structural and reduced forms	24
	<b>56</b>

**UNIT-II**

Topics to be covered	No. of Hours
The two variable linear model – Least squares estimators	16
Properties of the least squares estimators	16
Inference in the least squares model, the k – variable linear model – Assumptions of the linear model	24
	<b>56</b>

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**UNIT-III**

Topics to be covered	No. of Hours
Ordinary least squares (OLS) estimators – Properties of OLS estimators	16
Guass – Markov theorem – Inference problems	16
Problems in linear model – Multicollinearity – specification error	24
	<b>56</b>

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**UNIT-IV**

<b>Topics to be covered</b>	<b>No. of Hours</b>
Autocorrelation – Heteroscedasticity	16
Special models – Dummy variables, Lagged variables	16
Sources of lagged variables – Koyck scheme and Almon lags.	24
	<b>56</b>

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**NIZAM COLLEGE : DEPARTMENT OF STATISTICS**

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester VI)

Class : B.Sc (M.S.SC)

Section: Statistics

Course/Paper: P-VIII(b) (Operations Research)

No. of Hours Allotted: 56

**UNIT-I**

Topics to be covered	No. of Hours
Game theory – Introduction, Basic terms- Competitive game, zero sum and non zero sum games, strategy, two person zero sum games, pay off matrix	16
The minimax and maximin principle, Games without saddle point- mixed strategies.	24
Graphic solution of $2 \times n$ , $m \times 2$ games.	16
	<b>56</b>

**UNIT-II**

Topics to be covered	No. of Hours
Dominance property- principle of dominance to reduce the size of the game	16
generalized Dominance property, Arithmetic method for $n \times n$ games	24
General solution of rectangular games, game against passivity	16
	<b>56</b>

**UNIT-III**

Topics to be covered	No. of Hours
Network scheduling by PERT/CPM–	16
Network and basic components, logical sequencing,	16
Rules of network construction, distinction between PERT and CPM.	24
	<b>56</b>

**UNIT-IV**

Topics to be covered	No. of Hours
Float concept- Total float, Free float, Independent float, Interfering float, Event slacks	16
Time scale representation of floats and slacks.	16
Critical path analysis, Probability considerations in PERT.	24
	<b>56</b>

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## NIZAM COLLEGE : DEPARTMENT OF STATISTICS

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester V)

**Class :** B.Sc (M.S.SC)

**(Practicals)**

**Section:** Statistics

**Course/Paper:** P-VI(b)

**No. of Hours**

**Allotted:** 24

Topics to be covered	No. of Hours
Fitting of multiple regression model(3 variables).	3
Computation of $R^2$	2
Computation of auto correlation function	3
Computation of Multicollinearity	1
Computation of Dummy variable regression	2
Computation of OLS estimators	1
Testing of Heteroscedasticities	1
Computation of Koyck scheme.	<b>24</b>

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LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester V)

Class : B.Sc (M.S.SC)

(Practicals)

Section: Statistics

Course/Paper: P-VIII(b)

No. of Hours

Allotted: 24

Topics to be covered	No. of Hours
Determining the saddle point by minimax and maximin rules	2
Determining the optimum strategy for the games without saddle point	3
Graphic solution of 2xn and mx2 games	2
Solving games using dominance principles	2
Solving games by LPP	4
Solving games using algebraic method	2
Construction of Network diagrams	3
Construction of floats	2
Finding critical path by CPM	2
Finding critical path by PERT	2
	<b>24</b>

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