

M.V.R. DEGREE COLLEGE
(UG And PG Courses)
(Affiliated to Andhra University)
An Institution of Priyadarshini Educational Academy)
NAAC ACCREDITED COLLEGE

Dr.V.Rama Rao, M.A.,Ph.D.,
Secretary & Correspondent

Dr.A.Balakrishna,M.Sc.,Ph.D.,
Principal

Department of Statistics
Bachelor of science (B.Sc.- M.P.S. and M.S.CS.)
Course Outcomes (Cos) for Statistics
APSCHE w.e.f.2015-2016(revised in April 2016)

Course Code	Title of the Paper	Course Outcomes
Course-1 (Theory)	Descriptive Statistics and Probability	Co1: Explain Primary and Secondary data. Co2: Explain various measures of central tendency. Co3: Calculate mean, median and mode for the following data. Co4: Explain Skewness and Kurtosis. Co5: Explain various definitions of probability. Co6: State and prove addition theorem of probability. Co7: State and prove Baye's theorem. Co8: State and prove Boole's Inequality. Co9: What are the properties of distribution function? Co10: Define Stochastic independence of random variables.
Course-1 (Practical)	Descriptive Statistics and Probability	Students be able to apply theoretical / analytical / statistical knowledge gained in various courses of B.SC to solve probability problems based on real life situations during Practical's and draw meaningful solutions.

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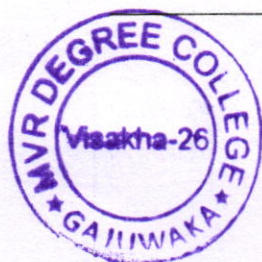


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Course Code	Title of the Paper	Course Outcomes
Course-2 (Theory)	<i>Mathematical Expectations and Probability distribution</i>	<p>Co1: Define Mathematical Expectation of a random variable.</p> <p>Co2: State and prove Multiplication theorem of Expectation.</p> <p>Co3: Derive Recurrence Relation for moments of Binomial distribution</p> <p>Co4: Define Poisson distribution and show that Mean & Variance of P.D.</p> <p>Co5: Define Geometric distribution and find its Mean and Variance.</p> <p>Co6: S.T Poisson distribution as a limiting case of Negative Binomial Distribution.</p> <p>Co7: Define Rectangular distribution and find its mean deviation about mean.</p> <p>Co8: Define Gamma distribution and find its mean and variance.</p> <p>Co9: Explain Normal distribution and give its properties</p> <p>Co10: Show that Normal distribution as a limiting case of Binomial distribution.</p>
Course-2 (Practical)	<i>Mathematical Expectations and Probability distribution</i>	Use Poisson, exponential distribution to solve statistical problems. Use different distributions to solve simple practical problems. Analyze Statistical data using MS-Excel.



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Course Code	Title of the Paper	Course Outcomes
Course-3 (Theory)	Statistical Methods	<p>Co1: Define Correlation and write the properties of Correlation.</p> <p>Co2: Derive Spearman's Rank Correlation Coefficient.</p> <p>Co3: Explain Regression Coefficients and give its properties.</p> <p>Co4: Explain the concept of Correlation Ratio.</p> <p>Co5: Fit a Straight line of the form $y=a+bx$ by using Legender's principle of least squares.</p> <p>Co6: Fit an exponential curve of the type (i) $y=ab^x$ (ii) $y=ae^{bx}$ by using the principle of least squares.</p> <p>Co7: Explain the conditions for consistency of data.</p> <p>Co8: Explain yule's coefficient of association.</p> <p>Co9: Define Population, Sample Parameter, Statistic, Standard error, Sampling distributions.</p> <p>Co10: Illustrate the applications of χ^2, t and F distributions</p>
Course-3 (Practical)	Statistical Methods	<p>In this we calculate χ^2 test, line, second degree parabola, power curves, exponential curves problems practically. We use this application in our daily life.</p>



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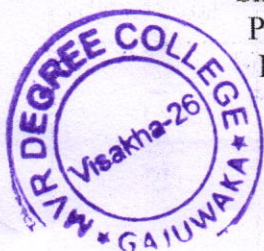
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Course Code	Title of the Paper	Course Outcomes
Course-4 (Theory)	Statistical Inference	<p>Co1: Write the characteristics of good estimator.</p> <p>Co2: State and Prove Cramer Rao Inequality.</p> <p>Co3: Obtain BCR for testing $H_0: \mu = \mu_0$ Against $H_1: \mu \neq \mu_0$ for the normal population.</p> <p>Co4: State and Prove Neymann Pearson's lemma.</p> <p>Co5: Explain large sample test for difference of standard deviations.</p> <p>Co6: Explain large sample test for difference of proportions.</p> <p>Co7: To find the χ^2 test for goodness of fit.</p> <p>Co8: Explain t-test for difference of means.</p> <p>Co9: Define non-parametric test and give its advantages and disadvantages.</p> <p>Co10: Explain sign test and Median test.</p>
Course-4 (Practical)	Statistical Inference	<p>In this paper we find the unknown parameters by using large sample tests and small sample tests.</p> <p>By using large sample tests and small sample tests we can estimate future values and data approximately.</p>

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Course Code	Title of the Paper	Course Outcomes
Course-5 (Theory)	Sampling Techniques and Designs of Experiment	<p>Co1: Definition of sample, population parameter, statistic sampling distribution, standard error: Principle steps in Sample Survey.</p> <p>Co2: Distribution between Census and Sample Survey Non-Sampling and Sampling Errors its sources Types of Sampling.</p> <p>Co3: Definition of Simple Random Sampling and its cases (SRSWR, SRSWOR)</p> <p>Co4: Theorem like $E(\bar{y}_n) = \bar{Y}_N$, $V(\bar{y}_n) = (N-n/Nn)S^2$ in SRSWR. Theorem like $E(\bar{y}_n) = \bar{Y}_N$, $V(\bar{y}_n) = (N-1/Nn)S^2$ in SRSWR.</p> <p>Co5: Methods of drawing SRS.</p> <p>Co6: Explanation of Stratified Random Sampling. Notations . Proportional and Optimum allocation. Theorem $V(\bar{y}_n)_{OPT} \leq V(\bar{y}_{st})_{prop} \leq V(\bar{y}_n)_{SRS}$</p> <p>Co7: Definitions, notations of Systematic Sampling. Theorem $V(\bar{y}_{sys})$, Comparison theorem. $V(\bar{y}_{st}) \leq V(\bar{y}_{sys}) \leq V(\bar{y}_n)_R$ for knowing the efficiency of which sampling is better.</p> <p>Co8: Meaning, Definition, Assumptions of ANOVA technique. One-way and two way classification of data with real life examples for conclusion of data.</p> <p>Co9: Principles of Designs of Experiment.</p> <p>Co10: Statistical Analysis of CRD, RBD and LSD with real life examples problems. Relative efficiency of RBD over CRD, LSD over RBD, CRD.</p>
Course-5 (Practical)	Sampling Techniques and Designs of Experiment	<p>In this sampling theory we can draw samples by using different sampling techniques like simple random sampling, stratified random sampling, systematic sampling etc. we can apply this sampling theory in our daily life. By using anova techniques the designs of experiments CRD, RBD and LSD conclusions can be given basing on Hypothesis for decision making of the experiments.</p>

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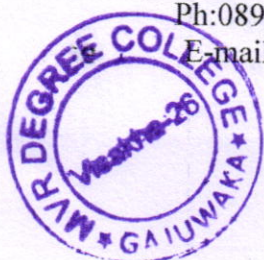
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Course Code	Title of the Paper	Course Outcomes
Course-6 (Theory)	Quality and Reliability	<p>Co1: Give the importance of SQC in industry.</p> <p>Co2: Explain the Statistical basis of Shewart's control charts.</p> <p>Co3: Construct \bar{X} and R charts and check whether the process is under SQC.</p> <p>Co4: How do you construct fraction defective and no. of defective charts?</p> <p>Co5: Explain the Scope of Acceptance Sampling Plans.</p> <p>Co6: Explain AQL and LTPD.</p> <p>Co7: Explain Single Sampling Plan and Double Sampling Plans for attributes.</p> <p>Co8: Using Binomial distribution, derive the Single and Double Sampling Plans for attributes.</p> <p>Co9: Define Reliability and derive the estimation of reliability.</p> <p>Co10: Explain Exponential distribution as a life model and its memoryless property.</p>
Course-6 (Practical)	Quality and Reliability	<p>In this we estimate the quality of different items in different fields by applying different quality techniques. The statistical quality control used to control the quality of products and identify the defective items. Convert the defective items into non defective items by applying different quality techniques.</p>

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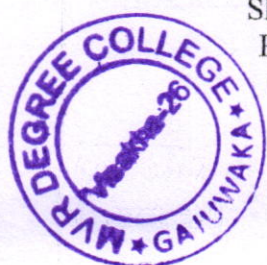
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Course Code	Title of the Paper	Course Outcomes
Course-7 (Theory)	Applied Statistics	<p>Co1: Meaning, definition, uses of time series,. Components of time series how it is used in business. Separation (Decomposition of time series) to study 4 Components separately and analyzing them.</p> <p>Co2: Know the methods of computing trend component, Seasonal Components.</p> <p>Co3: Meaning, definition and uses, limitations, problems involved in construction of index numbers.</p> <p>Co4: Types of index numbers and methods involved in constructing the types of index numbers. Criteria of good index numbers. Fixed, Chain base index numbers.</p> <p>Co5: Organisations and functions of CSO and NSSO used in different departments.</p> <p>Co6: Agricultural, yield statistics used in statistics and by Governments by knowing the data. National income, its Computation factors of national income used as a source of national income of a country.</p> <p>Co7: Meaning, definition, uses and sources of vital statistics for knowing about vital events of mankind.</p> <p>Co8: Various deaths, birth rates used for determination of the population of a Country.</p> <p>Co9: Measurement of rate of growth of population by knowing birth and death rates to know about population of a country by using different methods.</p> <p>Co10: Reproduction rates, GRR, NRR used as a source of determine the exact population of a country. Life tables</p>
Course-7 (Practical)	Applied Statistics	<p>In this we learn real life applications of statistics like time series, index numbers, vital statistics, birth rates, death rates, population growth, net reproduction rates and gross reproduction rates. These all are used in our daily life.</p>

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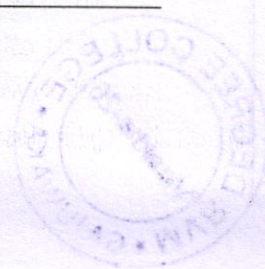
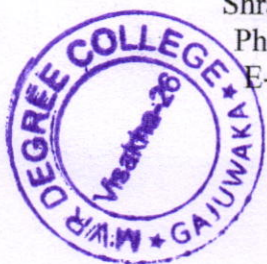
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Course-VIII (A1) (Theory)	Optimization techniques	<p>Co1:ExplainthenatureandscopeofOR.</p> <p>Co2: Explain the origin and development of OR.</p> <p>Co3: Define linear programming problem.</p> <p>Co4: Solve the graphical solution of LPP.</p> <p>Co5: Explain fundamental theorem of LPP.</p> <p>Co6: Find the LP problems by simplex method.</p> <p>Co7: Find the LP problems by Big-m method.</p> <p>Co8: Explain the method to resolve degeneracy in LPP.</p> <p>Co9: State the fundamental theorem of duality.</p> <p>Co10. Find the LP problems by Duality Simplex Method.</p>
Course-VIII (A1) (Practical)	Optimization techniques	<p>In this, we learn how to formulate real life problems and solving these problems using graphical method simplex, Big-M, Two- Phase method, dual simplex method, we can apply this in our daily life.</p>

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Course Code	Title of the Paper	Course Outcomes
Course-VIII (A2) (Theory)	Operations Research	<p>Co1:FindtheLPproblemsbyadvanced technique (i.e)RevisedSimplexMethod & Bounded variable technique.</p> <p>Co2: Find the difference between Simplex Method and Revised Simplex Method.</p> <p>Co3:DefineT.P.ShowthatT.Pasa special case of LPP.</p> <p>Co4:FindanIBFS(N-Wcornerrule, matrix minima, vogel's approximation method)</p> <p>Co5: Find the optimal solution by using MOD1 method.</p> <p>Co6: Explain the method to resolve degeneracy inT.P.</p> <p>Co7: Compute the balanced and unbalanced assignment problem using Hungarian method.</p> <p>Co8: Explain Travelling Sales man Problem.</p> <p>Co9:Explaintheassumptionsof sequencing problems.</p> <p>Co10: ComputethesequenceofnJobs on 2 and 3 machines.</p>
Course-VIII (A2) (Practical)	Operations Research	<p>In this, we learn the basic concepts theory and solving the problems using Revised simplex method, Bounded variable technique, Transportation problem, Assignment and sequencing problems. we can apply this in our daily life.</p>

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