"Dissemination of Education for Knowledge, Science and Culture"
-Shikshanmaharshi Dr. Bapuji Salunkhe
Shri Swami Vivekanand Shikshan Sanstha's
Vivekanand College, Kolhapur (AUTONOMOUS)
Department of Statistics

Content with Focus on Employability, Entrepreneurship, Skill Development U. G. 2018-19 to 2023-24

Sr. No.	Name of the Course	Course Code	Year of Introduction	Content with focus on employability	Content with focus on entrepreneurship	Content with focus on skill development
B. Sc. I Statistics (Newly Introduced in 2018-19)
1	Descriptive Statistics - I & Elementary Probability Theory	DSC-1004A	2018-19	Descriptive Statistics 1.Measures of central tendency 2. Measures of dispersion 3. Skewness and kurtosis		
2	Descriptive Statistics II & Discrete Probability Distributions	DSC-1004B	2018-19	1. Correlation 2. Regression 3. Multiple and partial correlation and regression 4. Time series 5. Discrete probability distributions		
B. Sc. II Statistics (Newly Introduced in 2019-20)
3	Probability Distributions I & Statistical Methods-I	DSC - 1004 C	2019-20	1. Continuous Univariate Distributions 2. Continuous Bivariate Distributions 3. Index Numbers 4. Demography	1. Statistical Quality Control	

4	Probability Distributions & Statistical Methods-II	DSC-1004D	2019-20	Exact sampling distributions	Reliability theory	1. Introduction to R 2. Testing of hypothesis
B. Com. II (Newly Introduced in 2019-20)						
5	Business Statistics I	CC - 1051 C	2019-20	1. Measures of central tendency 2. Measures of dispersion 3. Correlation and regression		Sampling techniques
6	Business Statistics II	CC - 1051 D	2019-20	1. Probability distributions 2. Time series 3. Index numbers	Statistical Quality Control	
B. Sc. III Statistics (Newly Introduced in 2020-21)						
7	Probability Distributions	DSE 1004E1	2020-21	1. Univariate Continuous Probability Distributions 2. Bivariate Normal distribution 3. Truncated distributions 4. Order statistics 5. Markov chains	Queuing Theory	
8	Sampling Theory & Operation Research	DSE 1004E2	2020-21	1. Sampling methods 2. Linear programming	1.Transportation and Assignment Problems 2. Decision Theory	Simulation Techniques
9	Probability Theory & Statistical Inference - II	DSE 1004F1	2020-21	1.Point estimation 2. Estimation methods 3. Interval estimation		Parametric and Non-parametric tests
10	Design of Experiments, Quality Management & Data Mining	DSE 1004F2	2020-21	Designs of Experiments	1. Process control & Product control 2. Data Mining	

B. Sc. I Statistics (Newly Introduced in 2021-22)						
11	Descriptive Statistics - I	DSC - 1004 A	2021-22	Descriptive Statistics 1.Measures of central tendency 2. Measures of dispersion 3. Skewness and kurtosis		
12	Elementary Probability Theory	DSC - 1004 A	2021-22	1. Univariate Probability Distributions		
13	Descriptive Statistics - II	DSC - 1004 B	2021-22	1. Correlation 2. Regression 3. Demography 4. Time series		
14	Discrete Probability Distributions	DSC - 1004 B	2021-22	Standard Discrete Probability Distributions		
B. Sc. II Statistics (Newly Introduced in 2022-23)						
15	Probability Distributions I	DSC - 1004 C1	2022-23	Continuous Univariate & Bivariate Distributions		
16	Statistical Methods	DSC - 1004 C2	2022-23	1. Multiple linear Regression, Multiple and Partial Correlation 2. Index Number	Official Statistics	
17	Probability Distributions II	DSC - 1004 D1	2022-23	Exact sampling distributions		Statistics using R
18	Introduction to Reliability Theory & Testing of Hypothesis	DSC - 1004 D2	2022-23	Reliability Theory		Testing of Hypothesis
B. Com. II (Newly Introduced in 2022-23)						
19	Business Statistics I	CC - 1051 C	2022-23	1. Measures of central tendency 2. Measures of dispersion 3. Correlation		Sampling techniques

				4. Regression		
20	Business Statistics II	CC - 1051 D	2022-23	1.Probability and Probability Distributions 2. Time series 3. Index Number	Statistical Quality Control	
B. Sc. I Statistics (NEP 2020 Newly Introduced in 2023-24)						
21	Descriptive Statistics I	DSC03STA11	2023-24	Descriptive Statistics 1.Measures of central tendency 2. Measures of dispersion 3. Skewness and kurtosis		
22	Elementary Probability Theory	DSC03STA12	2023-24	1. Probability 2. Expectation		
23	Descriptive Statistics I	MIN03STA11	2023-24	Descriptive Statistics 1.Measures of central tendency 2. Measures of dispersion 3. Skewness and kurtosis		
24	Elementary Probability Theory	MIN03STA12	2023-24	1. Probability 2. Expectation 3. Univariate probability distributions		
25	Data Visualization & Sample Survey	OEC03STA11	2023-24	Sample Survey		Data Visualization & Presentation of Data
26	Exploratory Data Analysis	OEC03STA12	2023-24	Descriptive Statistics 1.Measures of central tendency 2. Measures of dispersion 3. Correlation and Regression		
B. Com. I Statistics (NEP 2020 Newly Introduced in 2023-24)						

| 27 | Business Statistics I | SEC02STA11 | | 1. Diagrammatic and graphical representation
2. Measures of central tendency
3. Measures of dispersion | | |
| 28 | Business Statistics II | SEC02STA21 | | Probability and Discrete Probability Distributions | Statistical Quality Control (S.Q.C.) | |

B. Sc. III Statistics (Newly Introduced in 2023-24)

29	Probability Distributions	DSE 1004E1	2023-24	1. Univariate and Multivariate Probability Distributions 2. Truncated Distributions & Bivariate Normal Distribution		
30	Statistical Inference - I	DSE 1004E2	2023-24	1. Point Estimation 2. Methods of Estimation		
31	Sampling Theory	DSE 1004E3	2023-24	1. SRS and Stratified Sampling 2. Systematic Sampling 3. Cluster Sampling		
32	Operations Research	DSE 1004E4	2023-24	1. Linear programming Problem 2. Decision Theory	Transportation, Assignment and Sequencing Problems	Simulation Techniques
33	Probability Theory	DSE 1004F1	2023-24		Finite Markov Chains & Queuing Theory	1. Order Statistics 2. Chebychev's Inequality 3. Convergence, WLLN & CLT
34	Statistical Inference -II	DSE 1004F2	2023-24	Interval Estimation		1. Parametric Tests 2. SPRT & Non-parametric Tests

35	Design of Experiments	DSE 1004F3	2023-24		Simple Designs of Experiments	ANOCOVA and Factorial Experiments and confounding
36	Quality Management	DSE 1004F4	2023-24		1.Process Control 2.Product Control	Quality Tools

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Content with Focus on Employability, Entrepreneurship, Skill Development P. G. 2022-23 to 2023-24

Sr. No.	Name of the Course	Course Code	Year of Introduction	Content with focus on employability	Content with focus on entrepreneurship	Content with focus on skill development
M. Sc. I Statistics (Newly Introduced in 2022-23)						
1	Real Analysis	CC-2300A	2022-23	Applications in multivariate distributions		1. Set of real numbers 2. Sequence of real numbers 3. Real valued function
2	Linear Algebra	CC-2301A	2022-23	Vector space, subspace		Characteristic roots and vectors of a matrix
3	Distribution Theory	CC-2302A	2022-23	1.Transformations of univariate random variables 2.Moment inequalities		1.Mixtures of probability distributions, decomposition of mixture CDF into discrete and continuous CDF 2.Expectation and variance of mixture distributions

4	Estimation Theory	CC-2303A	2022-23			1.Problem of point estimation 2.Bayes estimation
5	Statistical Computing	CC-2304A	2022-23	Resampling techniques		1. MSEXCEL 2. R-software 3. Concept of simulation
6	Probability Theory	CC-2306B	2022-23			1. Classes of sets 2. Weak and Strong laws of large numbers 3. Moment inequalities
7	Theory of Testing of Hypotheses	CC-2307B	2022-23	1. Problem of testing of Hypothesis 2. Problem of confidence intervals		Likelihood ratio test and its application
8	Linear Models and Regression analysis	CC-2308B	2022-23	1. General linear model 2. Multiple regression model		1. Robust Regression, 2. Multicollinearity
9	Design and analysis of Experiment	CC-2309B	2022-23	1. Experimental designs 2. Applications of DOE		1. Factorial designs 2. Response surface methodology
10	Sampling Theory & Official Statistics	CC-2310B	2022-23	Random samplings		1. PPS methods 2. Double sampling
	M. Sc. II Statistics (Newly Introduced in 2023-24)					
11	Asymptotic Inference	CC-2312A	2023-24			1.Consistency of an estimator 2. Variance stabilizing transformations 3.Likelihood ratio

4	Estimation Theory	CC-2303A	2022-23			1. Problem of point estimation 2. Bayes estimation
5	Statistical Computing	CC-2304A	2022-23	Resampling techniques		1. MSEXCEL 2. R-software 3. Concept of simulation
6	Probability Theory	CC-2306B	2022-23			1. Classes of sets 2. Weak and Strong laws of large numbers 3. Moment inequalities
7	Theory of Testing of Hypotheses	CC-2307B	2022-23	1. Problem of testing of Hypothesis 2. Problem of confidence intervals		Likelihood ratio test and its application
8	Linear Models and Regression analysis	CC-2308B	2022-23	1. General linear model 2. Multiple regression model		1. Robust Regression, 2. Multicollinearity
9	Design and analysis of Experiment	CC-2309B	2022-23	1. Experimental designs 2. Applications of DOE		1. Factorial designs 2. Response surface methodology
10	Sampling Theory & Official Statistics	CC-2310B	2022-23	Random samplings		1. PPS methods 2. Double sampling
M. Sc. II Statistics (Newly Introduced in 2023-24)					
11	Asymptotic Inference	CC-2312A	2023-24			1. Consistency of an estimator 2. Variance stabilizing transformations 3. Likelihood ratio

						test and its asymptotic distribution 4. CAN and BAN estimators
12	Multivariate Analysis	CC-2313A	2023-24	Exploratory multivariate data analysis	1. Discrimination and classification 2. Canonical correlation analysis 3. Principal component analysis 4. Factor analysis	
13	Stochastic Processes	CC-2314A	2023-24	1. Poisson process 2. Birth and death processes 3. Queuing models	1. Galton-Watson Binaymi process 2. Branching process	Markov chain
14	Data Mining	CC-2315A	2023-24	1. ANN and SVM, 2. Unsupervised learning	classification techniques	1. Data understanding and data cleaning 2. Model evaluation and selection
15	Time Series Analysis	CC-2316A	2023-24	1. Estimation of ARMA 2. ARIMA and SARIMA models	1. Introduction to ARCH and GARCH models 2. Vector time-series models	Exploratory time series analysis
16	Generalized Linear Models	CC-2318B	2023-24	1. Logistic regression 2. Poisson regression		1. Generalized linear models 2. Generalized linear mixed models

						(GLMM)
17	Survival Analysis	CC-2319B	2023-24			1. Various types of censoring 2. Summarizing competing risks data
18	Biostatistics	CC-2320B	2023-24	Clinical trials	1. Design of clinical trials 2. Design of bio-equivalence trials, 3. Epidemiological studies	
19	Optimization Techniques	CC-2321B	2023-24	Linear programming problem (LPP),	1. Integer Linear Programming Problem (ILPP) 2. Dynamic Programming	1. Artificial variable technique 2. Theory of games
20	Statistical Quality Control	CC-2322B	2023-24	1. Process capability Analysis 2. Shewhart Control charts	Acceptance sampling plans	1. Quality Improvement Tools 2. Normal probability plot 3. Engineering Process Control.
M. Sc. I Statistics (NEP 2020 Newly Introduced in 2023-24)						
21	Distribution Theory	DSC18STA11	2023-24	1. Transformations of univariate random variables 2. Multivariate normal distribution		1. Mixtures of probability distributions 2. Decomposition of mixture CDF into discrete and continuous CDFs,

						3. Expectation and variance of mixture distributions, Moment inequalities
22	Estimation Theory	DSC18STA12	2023-24			1. Problem of point estimation 2. Bayes estimation, 3. Consistency of an estimator
23	Statistical Computing	DSC18STA13	2023-24	1. MSEXCEL 2. R-software		
24	Research Methodology	RMD18STA11	2023-24	1. Sampling techniques 2. Resampling methods		1.Meaning of research 2.Objectives of research, motivation in research
25	Mathematical Statistics	DSE17STA11	2023-24			1.Sequences of real numbers 2. Real valued functions 3.Vectors
26	Real Analysis	DSE17STA12	2023-24	1. Applications in multivariate distributions		1.Set of real numbers 2.Sequence of real numbers 3.Real valued function
27	Linear Algebra	DSE17STA13	2023-24	Vector space, subspace		Characteristic roots and vectors of a

						matrix
28	C Programming	DSE18STA11	2023-24	Algorithms, Flow charts	Arrays, Pointers	Control Structures
29	Statistical Analysis Using SPSS	DSE18STA12	2023-24	Statistical analysis using SPSS		
30	Linear model and Regression Analysis	DSC18STA21	2023-24	1. General linear model 2. Multiple regression model	Logistic and Poisson regression	
31	Theory of Testing of Hypothesis	DSC18STA22	2023-24	1. Problem of testing of Hypothesis 2. Problem of confidence intervals		Likelihood ratio test and its application
32	Multivariate Analysis	DSC18STA23	2023-24	Multivariate Normal distribution	1. Discrimination and classification 2. Canonical correlation analysis 3. Principal component analysis 4. Factor analysis	Cluster analysis,
33	Probability Theory	DSE17STA21	2023-24			1. Classes of sets 2. Convergence of sequence of random variables 3. Characteristic function
34	Reliability theory	DSE17STA22	2023-24	Ageing properties		1. Reliability concepts and measures 2. Life time distributions
35	DBMS	DSE18STA21	2023-24	1. Database design and		1. Introduction to

				ER Model 2. Transaction management		Databases and Data Models 2. SQL
36	Statistical Analysis Using Minitab	DSE18STA22	2023-24	Statistical analysis using MINITAB		

Dr. R. R. Kumbhar

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