UNIVERSITY OF MYSORE
Department of Studies in Statistics
Manasagangotri, Mysuru 570006

PROCEEDINGS of the annual meeting of the (composite) Board of Studies in Statistics held on May 19, 2025 at 12.15 PM at the Office of the Chairman, Department of Studies in Statistics, University of Mysore, Manasagangotri, Mysuru 570006.

Members:

1. Prof. B.S.Biradar, Chairman, Department of Studies in Statistics, University of Mysore, Manasagangotri, Mysuru 570006. 19.05.2025
2. Dr. Manjunath Krishnapur, Department of Mathematics, Indian Institute of Science, Bengaluru. (could not come, e-mail attached)
3. Prof. H.S.Nagendraswamy, Department of Studies in Computer Science, University of Mysore, Manasagangotri, Mysuru 570006. 19/5/2025
4. Prof. Surekha Munoli, Department of Statistics, Karnatak University, Dharwad. (could not come, email attached)
5. Prof. A.P.Gnana Prakash, Department of Studies in Physics, University of Mysore, Manasagangotri, Mysuru 570006. DID NOT COME
6. Prof. Veena Mathad, Department of Studies in Mathematics, University of Mysore, Manasagangotri, Mysuru 570 006. (could not come, email attached)
7. Prof. H.B.Ravikumar, Department of Studies in Physics, University of Mysore, Manasagangotri, Mysuru 570 006. HAS NOT COME FOR A SINGLE MEETING
8. Prof. S.Ravi, Chairman, BoS (composite) in Statistics, Department of Studies in Statistics, University of Mysore, Manasagangotri, Mysuru 570006. 19-05-2025

The Chairman welcomed the members of the Board (composite) of Studies in Statistics.

Agenda 1: Confirmation of Proceedings of the last Board of Statistics Special meeting held on 06.06.2024.
Resolution: The Chairman read the Proceedings of the last annual Board of Studies meeting held on 06.06.2024 and the members ratified the same. The Chairman also informed the members that a special BoS meeting was held last year to ratify the B.Sc. Syllabi prepared under NEP.
Agenda 2: Revising syllabi once in 3 years as per UGC guidelines.

Resolution: The members noted that the syllabi have been revised from time to time as per UGC guidelines.

Agenda 3: Changes, if any, in the existing regulations for UG and PG programs.

Resolution: The members noted that the B.Sc. Statistics subject shall be taught to students from the academic year 2024-25 onwards under the SEP of the State Government. The members noted that the PG program is under the FCBCS regulations.

Agenda 4: Changes, if any, in the syllabi of UG and PG programs for 2025-26.

Resolution: The members perused the Statistics Syllabi for B.Sc. III and IV semesters to be followed from the academic year 2025-26 under the SEP. The members approved the Syllabi.

Agenda 5: Introduction of new programs from 2025-26, if any.

Resolution: None.

Agenda 6: Preparation of panel of examiners of B.Sc. and M.Sc. Statistics examinations.

Resolution: The members prepared the panel of examiners.

Agenda 7: Any other matter.

None.

The Chairman thanked the members for their valuable suggestions and comments.

19-05-2025

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Department of Studies in Statistics
University of Mysore
Manasagangotri, Mysore-570006

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B.Sc.Statistics-Major

(Syllabi of I and II semesters have been approved again with minor corrections and Syllabi of III and IV semesters have been approved at the Annual meeting of the Board (composite) of Studies in Statistics held on May 19, 2025)

Syllabi for Semesters I & II
from Academic Year 2024 onwards

Course Content of Semester – I

Title: **Course 1: Descriptive Statistics**	Course Credits: 3 (Theory)
Total Contact Hours: 42	Duration of ESA: 3 hours
Formative Assessment Marks: 20	Summative Assessment Marks: 80
Authors: Members of Board of Studies in Statistics (composite)	

Number of lecture hours/semester	Assessment	
	Formative Assessment /IA	Summative Assessment
42	**C-1: 10 Marks** **C-2: 10 Marks**	**C-3: 80 marks**

Course 1: Descriptive Statistics **42hrs**

Unit – 1 : Introduction to Statistics: **10 hrs**

Statistics - Definition and scope, concepts of statistical population and sample (Simple Random Sampling, Stratified, Systematic and Cluster sampling methods - Definitions only). Data: quantitative and qualitative, cross-sectional and time-series, discrete and continuous. Scales of measurement: nominal, ordinal, interval and ratio. Presentation of data: tabular and graphical. Frequency distributions, cumulative frequency distributions and their graphical representations including Stem-and-leaf diagram.

Unit – 2: Univariate Data Analysis: **12hrs**

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University of Mysore
Manasagangotri, Mysore-570006

Concepts of Measures of central tendency, measures of dispersion, Arithmetic Mean, Median, Mode, Geometric and Harmonic means, properties, merits and limitations, relations between these measures; Range, Quartile deviation, Mean deviation, Standard deviation and their relative measures. Moments, Skewness and Kurtosis. Quantiles and measures based on them. Box-Plot. Outliers.

Unit – 3: Bivariate Data Analysis: **10 hrs**

Bivariate Data, Scatter plot, Correlation, Karl Pearson's correlation coefficient, Rank correlation: Spearman's and Kendall's measures. Principle of least squares, Simple linear regression and its properties. Fitting of linear regression line and coefficient of determination, fitting of polynomial and exponential curves.

Unit –4: Multivariate Data Analysis: **10hrs**

Analysis of Categorical Data: Contingency table, independence and association of attributes, measures of association. Multivariate Frequencies, Multivariate Data Visualization, mean vector and dispersion matrix, Multiple linear regression, multiple and partial correlation coefficients. Residual error variance.

References:

1. Agresti, A. (2010): Analysis of Ordinal Categorical Data, 2nd Edition, Wiley.
2. Anderson T.W. and Jeremy D. Finn (1996). The New Statistical Analysis of Data, Springer
3. Freedman, D., Pisani, R. and Purves, R. (2014), Statistics, 4th Edition, W. W. Norton & Company.
6. Joao Mendes Moreira, Andre C P L F de Carvalho, Tomas Horvath (2018), General Introduction to Data Analytics, Wiley.
8. Johnson, R.A. and Bhattacharyya, G.K. (2006), Statistics: Principles and methods. 5th Edition, John Wiley & Sons, New York.
9. Medhi, J. (2005), Statistical Methods, New Age International.
10. Ross, S.M. (2014), Introduction to Probability and Statistics for Engineers and Scientists, 5th Edition, Academic Press.
11. Tukey, J.W. (1977), Exploratory Data Analysis, Addison-Wesley Publishing Co.

Pedagogy: The course is taught using traditional chalk and talk method using problem solving through examples and exercises.Students are encouraged to use resources available on open sources.

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University of Mysore
Manasagangotri, Mysore-570006

Course 2: Practical-I- Descriptive Statistics

Number of practical Credits	Number of practical hours/semester	Assessment	
		Formative Assessment /IA	Summative Assessment
02	52	C-1: 10 Marks C-2: 10 Marks	C-3: 80 marks

Course 2: Practical –I - Descriptive Statistics

(Students have to carry-out all practical manually as well as using Excel spreadsheet)

One or two sessions on Important Statistical software's (Excel spreadsheet, R, SPSS, Python, etc.) and their uses

1. Presentation of data by frequency tables, diagrams and graphs, stem-and-leaf, partition values.
2. Arithmetic Mean (AM), geometric mean, harmonic mean, weighted AM, trimmed mean, corrected mean.
3. Mode, median, partition values.
4. Absolute and relative measures of dispersion, Box-plot.
5. Problems on moments, skewness and kurtosis.
6. Fitting of curves by least squares method.
7. Product moment correlation coefficient and rank correlation.
8. Regression of two variables.
9. Multivariate Descriptive statistics, mean vector, dispersion matrix correlation matrix, Partial and Multiple correlation.
10. Problems on Association of attributes.

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Department of Studies in Statistics
University of Mysore
Manasagangotri, Mysore-570006

Course Content of Semester – II

Title: Course 3: Probability Theory and Distributions	Course Credits:3
Total Contact Hours: 42	Duration of ESA: 3 hours
Formative Assessment Marks: 20	Summative Assessment Marks: 80
Authors: Members of Board of Studies in Statistics (composite)	

Course 3: Probability Theory and Distributions **42 Hours**

Number of lecture hours/semester	Assessment	
	Formative Assessment /IA	Summative Assessment
42	C-1: 10 Marks C-2: 10 Marks	C-3: 80 marks

Unit – 1 : Probability: 12hrs

Probability - Introduction, random experiments, sample space, events and algebra of events.

Definitions of Probability – classical, statistical, and axiomatic. Conditional Probability, laws of addition and multiplication, independent events, theorem of total probability, Bayes' theorem and its applications

Unit 2: Random variables: discrete and continuous random variables, p.m.f., p.d.f. and c.d.f., illustrations and properties of random variables, univariate transformations with illustrations. Two dimensional random variables: discrete and continuous type, joint, marginal and conditional p.m.f, p.d.f., and c.d.f., independence of variables, bivariate transformations with illustrations

Unit: 3 : Mathematical Expectation and Generating Functions: Expectation of single and bivariate random variables and its properties. Moments and Cumulants, moment generating function, cumulant generating function and characteristic function. Uniqueness and inversion theorems (without proof) along with applications. Conditional expectations, covariance and correlation. 10 hrs

Unit :4 Standard Distributions: 10 hrs

Discrete distributions - Rectangular, Bernoulli ,Binomial Poisson, Geometric, Negative Binomial, Hypergeometric, Multinomial- definition through probability mass function, mean, variance, moments, p.g.f., m.g.f., other properties and applications. Continuous distributions - Uniform, Gamma, Exponential, Normal , Beta (type 1 and type 2), definition through probability density function, mean, variance, moments, m.g.f., other properties and applications.

References

1. Dudewitz. E.J. and Mishra. S. N. (1998), Modern Mathematical Statistics. John Wiley.
2. Goon A.M., Gupta M.K., Das Gupta .B. (1991), Fundamentals of Statistics, Vol. I, World Press, Calcutta.

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Department of Studies in Statistics
University of Mysore
Manasagangotri, Mysore-570006

3. Gupta. S.C and V.K. Kapoor (2020), Fundamentals of Mathematical Statistics, Sultan Chand and Co, 12th Edition.
4. Hogg, R.V., Tanis, E.A. and Rao J.M. (2009), Probability and Statistical Inference, Seventh Edition, Pearson Education, New Delhi.
5. Mood, A.M., Graybill, F.A. and Boes, D.C. (2007), Introduction to the Theory of Statistics, 3rd Edition. (Reprint), Tata McGraw-Hill Pub. Co. Ltd.
6. Ross, S. (2002), A First Course in Probability, Prentice Hall.

Pedagogy: The course is taught using traditional chalk and talk method using problem solving through examples and exercises. Students are encouraged to use resources available on open sources.

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University of Mysore
Manasagangotri, Mysore-570006

Course 4: Practical-II- Probability Theory and Distributions

Number of practical Credits	Number of practical hours/semester	Assessment	
		Formative Assessment /IA	Summative Assessment
02	52	C-1: 10 Marks C-2: 10 Marks	C-3: 80 marks

Course 4: Practical II: - Probability Theory and Distributions

List of Experiments to be conducted:

1 Computing probabilities using addition and multiplication theorems.
2. Conditional probability and Bayes' theorem
3. Problems on pmf, cdf, expectation, variance, quantiles, skewness, kurtosis (Discrete Case).
4. Problems on pdf, cdf, expectation, variance, quantiles, skewness, kurtosis (Continuous case).
5. Bivariate Probability Distributions - Marginal and Conditional distributions,
6. Bivariate Probability Distributions - Conditional Mean, Conditional Variance, Correlation.
7. Fitting of discrete distributions-I
8 . Fitting of discrete distributions-II
9. Fitting of Continuous distributions-I
10. Fitting of Continuous distributions-II

Course Content of Semester – III

Course Title: Sampling distributions	Course Credits:3
Total Contact Hours: 42	Duration of ESA: 3 hours
Formative Assessment Marks: 20	Summative Assessment Marks: 80
Model Syllabus Authors: Statistics BoS Members ,UoM	

Title of Course : Sampling distributions

Number of Theory Credits	Number of lecture hours/semester	Assessment	
		Formative Assessment /IA	Summative Assessment
03	**42**	**C-1: 10 Marks** **C-2: 10 Marks**	**C-3: 80 marks**

Content Theory Course	**42 hrs**
Unit – 1: Limit laws	**10 hrs**
Limit laws: convergence in probability, almost sure convergence, convergence in mean square and convergence in distribution and their inter relations, Chebyshev's inequality, W.L.L.N., S.L.L.N. and their applications, De-Moivre Laplace theorem, Central Limit Theorem (C.L.T.) for i.i.d. variates, applications of C.L.T. and Liapunov Theorem (without proof). Order Statistics: Introduction, distribution of the rth order statistic, smallest and largest order statistics.	
Unit-2: Sampling distributions	**10 hrs**
Definitions of random sample, parameter and statistic, sampling distribution of a statistic, sampling distribution of sample mean, standard errors of sample mean, sample variance and sample proportion. Null and alternative hypotheses, critical region, Type I and Type II errors, their probabilities, level of significance. Large sample tests, use of CLT for testing single proportion, difference of two proportions, single mean, difference of two means, standard deviation and difference of standard deviations by classical and p-value approaches.	
Unit – 3: Chi-Square Distribution	**10 hrs**
Exact sampling distribution: Definition and derivation of p.d.f. of $\chi 2$ with n degrees of freedom (d.f.) using m.g.f., nature of p.d.f. curve for different degrees of freedom, mean, variance, m.g.f., cumulant generating function, mode, additive property and limiting form of $\chi 2$ distribution. Tests of significance and confidence intervals based on Chi-square distribution.	
Unit-4 t and F Distributions	**12 hrs**
Exact sampling distributions: Student's and Fishers t-distribution, Derivation of its p.d.f., nature of probability curve with different degrees of freedom, mean, variance, moments and limiting form of t distribution. Snedecore's F-distribution: Derivation of p.d.f., nature of p.d.f. curve with different degrees of freedom, mean, variance and mode. Distribution of 1/F(n1,n2). Relationship between t, F and $\chi 2$ distributions. Test of significance and confidence Intervals based on t and F distributions.	

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Department of Studies in Statistics
University of Mysore
Manasagangotri, Mysore-570006

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1. Casella and Berger (2002), Statistical Inference, Duxbury advanced series, 2nd Edition
2. Dudewitz. E.J. and Mishra. S. N. (1998), Modern Mathematical Statistics. John Wiley.
3. Gupta. S.C and V.K. Kapoor (2020), Fundamentals of Mathematical Statistics, Sultan Chand and Co, 12th Edition.
4. Johnson, R.A. and Bhattacharya, G.K. (2001): Statistics-Principles and Methods, 4th Edn. John Wiley and Sons.
5. Hogg, R.V., Tanis, E.A. and Rao J.M. (2009), Probability and Statistical Inference, Seventh Edition, Pearson Education, New Delhi.
6. Mood, A.M., Graybill, F.A. and Boes, D.C. (2007): Introduction to the Theory of Statistics, 3rd Edn. (Reprint).Tata McGraw-Hill Pub. Co. Ltd.
7. Pitman, J (1993), Probability, Springer
8. Rohatgi V. K. and Saleh, A.K. Md. E. (2009): An Introduction to Probability and Statistics. 2ndEdn. (Reprint) John Wiley and Sons.

PROFESSOR
Department of Studies in Statistics
University of Mysore
Manasagangotri, Mysore-570006

Title of Course : Practical-III- Sampling distributions

Number of practical Credits	Number of practical hours/semester	Assessment	
		Formative Assessment /IA	Summative Assessment
02	**52**	**C-1: 10 Marks** **C-2: 10 Marks**	**C-3: 80 marks**

Practical –III :Content of Practical Course: Sampling distributions

(Carrying-out all the practical manually as well as using MS Excel/R/Python/SPSS)

1. Testing of significance and confidence intervals for single proportion and difference of two proportions.
2. Testing of significance and confidence intervals for single mean.
3. Testing of significance and confidence intervals for difference of two means and paired tests.

4. Testing of significance and confidence intervals for difference of two standard deviations.
5. Exact Sample Tests based on Chi-Square Distribution.
6. Testing if the population variance has a specific value and its confidence intervals.
7. Testing of goodness of fit.
8. Testing of independence of attributes.
9. Testing based on 2 X 2 contingency table without and with Yates' corrections.
10. Testing of significance and confidence intervals of an observed sample correlation coefficient.
11. Testing and confidence intervals of equality of two population variances
12. Determination of sample size(s) based on proportion(s) and mean(s)
13.

Course Content of Semester – IV

Course Title: Statistical Inference	Course Credits:3
Total Contact Hours: 42	Duration of ESA: 3 hours
Formative Assessment Marks: 20	Summative Assessment Marks: 80
Model Syllabus Authors: Statistics BoS Members ,UoM	

Title of Course : Statistical Inference

Number of Theory Credits	Number of lecture hours/semester	Assessment	
		Formative Assessment /IA	Summative Assessment
03	**42**	**C-1: 10 Marks** **C-2: 10 Marks**	**C-3: 80 marks**

Content Theory Course	**42 hrs**
Unit – 1 : Estimation	**12 hrs**
Estimation: Concepts of estimation, unbiasedness, sufficiency, consistency and efficiency. Factorization theorem. Complete statistic, Minimum variance unbiased estimator (MVUE), Rao-Blackwell and Lehmann-Scheffe theorems and their applications. Cramer-Rao inequality and MVB estimators(statement and applications).	
Unit – 2: Methods of Estimation	**12 hrs**
Methods of Estimation: Method of moments, method of maximum likelihood estimation, method of minimum Chi-square, basic idea of Bayes estimators.	
Unit-3: Testing of hypotheses	**12 hrs**
Hypotheses, Null and alternative hypotheses (simple and composite), critical region ,Type-I and Type-II errors, , level of significance, size and power, best critical region, most powerful test, uniformly most powerful test, Neyman Pearson Lemma (statement and applications to construct most powerful test). Likelihood ratio test, properties of likelihood ratio tests (without proof).	
Unit-4: Nonparametric Tests	**6 hrs**
Nonparametric Tests: Introduction and Concept, Test for randomness based on total number of runs, Empirical distribution function, Kolmogrov Smirnov test for one sample, Sign tests- one sample and two samples, Wilcoxon-Mann-Whitney test, Tests for Several sample Problem: Kruskal-Wallis test.	

References

1. Casella and Berger (2002), Statistical Inference, Duxbury advanced series, 2nd Edition
2. Dudewitz. E.J. and Mishra. S. N. (1998), Modern Mathematical Statistics. John Wiley.
3. Gibbons, J. D. and Chakraborty, S (2003): Nonparametric Statistical Inference. 4th Edition. Marcel Dekker, CRC.
4. Gupta. S.C and V.K. Kapoor (2020), Fundamentals of Mathematical Statistics, Sultan Chand and Co, 12th Edition.
5. Hogg, R.V., Tanis, E.A. and Rao J.M. (2009), Probability and Statistical Inference, Seventh Edition, Pearson Education, New Delhi.
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PROFESSOR
Department of Studies in Statistics
University of Mysore
Manasagangotri, Mysore-570006

Title of Course : Practical-IV- Statistical Inference

Number of practical Credits	Number of practical hours/semester	Assessment	
		Formative Assessment /IA	Summative Assessment
02	**52**	**C-1: 10 Marks** **C-2: 10 Marks**	**C-3: 80 marks**

Practical –IV :Content of Practical Course: **Statistical Inference**

(Carrying-out all the practical manually as well as using MS Excel/R/Python/SPSS)

1. Unbiased estimators (including unbiased but absurd estimators)
2. Consistent estimators, efficient estimators and relative efficiency of estimators.
3. MSE computations
4. Estimation by the method of moments, minimum Chi-square
5. Type I and Type II errors Size of tests
6. Power curves
7. Test for randomness based on total number of runs
8. Kolmogrov Smirnov test for one sample.
9. Sign test: one sample, two samples, large samples.
10. Wilcoxon-Mann-Whitney U-test
11. Kruskal-Wallis test

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Department of Studies in Statistics
University of Mysore
Manasagangotri, Mysore-570006

Elective 1

Title of Course : Big data and data science

Number of Theory Credits	Number of lecture hours/semester	Assessment	
		Formative Assessment /IA	Summative Assessment
3	42	**C-1: 10 Marks** **C-2: 10 Marks**	**C-3: 80 marks**

Content Theory Course	42 hrs
Unit – 1: Big data	**14 hrs**
Introduction to big data. V's of big data, sources of big data, Structured and unstructured data, Storage problems in big data- tools to store and process big data. Social media analysis, social media analytic tools. Data mining, predictive data mining and descriptive data mining, difference between predictive and descriptive data mining. Data wrangling and APIs. Data products, recommendation engine, building a user-facing data product. Interactive data exploration.	
Unit-2 : Machine learning	**04 hrs**
Introduction to artificial intelligence and machine learning. Supervised and unsupervised machine learning algorithms.	
Unit-3: Basic machine learning algorithms	
Supervised: (1) Linear regression, simple linear regression, multiple linear regression analysis. Estimation and testing for significance of regression coefficients. Checking for model adequacy- using coefficient of determination, p-values and cross validation techniques. (2) K-NN classification: Introduction to k-nearest neighbours, assumptions in k-NN classification. Distance metrics used in k-NN classification and use of misclassification rate. Curse of dimensionality. Unsupervised: Clustering- Introduction to cluster analysis, Hierarchical and non-hierarchical clustering techniques, k-means clustering- algorithm, advantages and disadvantages.	**14 hrs**
Unit 4: Spam filtering	**10 hrs**
Spam, spam filtering, signs of spam emails, classification of spam and ham emails using Bayes' formula, naïve Bayes' algorithm.	

References

Aravind Sathi. (2012) Big Data Analytics: Disruptive Technologies for changing the Game, MC Press.

Frank J. Ohlhorst. (2012) Big Data Analytics: Turning Big data into Big Money, Wiley.

James, G., Witten, D., Hastie, T and Tibshirani, R. (2021). An Introduction to Statistical Learning- with applications in R, Springer.

James, G., Witten, D., Hastie, T., Tibshirani, R and Taylor, J. (2023). An Introduction to Statistical Learning- with applications in Python, Springer.

Montgomery,D.C, Peck, E.A. and Vining,G.G. (2003). Introduction to Linear Regression, John Wiley.

Rachel Schutt and Cathy O'Neil. (2015) Doing Data Science-Straight Talk from The Frontline.

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Department of Studies in Statistics
University of Mysore
Manasagangotri, Mysore-570006

Elective 2

Title of Course : Applied statistics

Number of Theory Credits	Number of lecture hours/semester	Assessment	
		Formative Assessment /IA	Summative Assessment
03	**42 hrs**	**C-1: 10 Marks** **C-2: 10 Marks**	**C-3: 80 marks**

Content Theory Course	**42 hrs**
Unit-1 : Statistical Quality Control	**10 hrs**
Concept of statistical quality control, chance and assignable causes for quality, general theory of control charts, control charts for variables – X-bar and R charts, control charts for attributes – P and C charts, Product control – acceptance sampling plans, AQL, LTPD, AOQ, AOQL, ASN, OC curve, Producer's risk, Consumer's risk, Single sampling plan, double sampling plan.	
Unit – 1: Time series analysis	**10 hrs**
Introduction to times series data, application of time series from various fields, Components of a times series, Decomposition of time series. Measurement of trend by free-hand curve fitting method, method of moving averages, Method of least squares. Effect of elimination of trend on other components of the time series. Seasonal Component: Estimation of seasonal component by Method of simple averages, Ratio to Trend.	
Unit -2: Index numbers	**10 hrs**
Definition, construction of index numbers and problems thereof for weighted and unweighted index numbers including Laspeyre's, Paasche's, Edgeworth- Marshall and Fisher's Ideal Index numbers. Errors in Index numbers. Chain index numbers, conversion of fixed based to chain based index numbers and vice-versa. Consumer price index numbers. Uses and limitations of index numbers.	
Unit-3: Demographic statistics	**12 hrs**
Introduction and sources of collecting data on vital statistics, errors in census and registration data. Measurement of population, rate and ratio of vital events. Measurements of Mortality: Crude Death Rate (CDR), Specific Death Rate (SDR), Infant Mortality, Rate (IMR) and Standardized Death Rates. Stationary and Stable population, Central Mortality Rates and Force of Mortality. Life (Mortality)Tables: Assumption, description, construction of Life Tables and Uses of Life Tables. Abridged Life Tables; Concept and construction of abridged life tables by Reed-Merrell method, Measurements of Fertility: Crude Birth Rate (CBR), General Fertility Rate (GFR), Specific Fertility Rate (SFR) and Total Fertility Rate (TFR). Measurement of Population Growth: Crude rates of natural increase, Pearl's Vital Index, Gross Reproduction Rate (GRR) and Net Reproduction Rate (NRR).	

References

1. Chatfield C. (1980): The Analysis of Time Series –An Introduction, Chapman & Hall.
2. D.C.Montgomery. (1996). Introduction to Statistical Quality Control, Wiley

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University of Mysore
Manasagangotri, Mysore-570006

3. Mukhopadhyay P. (2011): Applied Statistics, 2nd ed. Revised reprint, Books and Allied

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Skill/Practical

Title of Course : Statistical computing using R/Python

Number of Practical Credits	Number of lecture hours/semester	Assessment	
		Formative Assessment /IA	Summative Assessment
02	28	**C-1: 10 Marks** **C-2: 10 Marks**	**C-3: 80 marks**

Data input methods – Scan function, C-function. Importing data from Excel and MS-word.

Diagrams and graphs-Simple bar diagram, Box plot, Histogram, stem and leaf diagram, multiple bar diagrams, subdivided bar diagrams and pie chart.

Summary statistics, measure of central tendency and measure of dispersion.

Plot of pmf of discrete distributions for different parameters.

Plot of pdf of continuous distributions.

Use of loops and functions.

Generation of random observation from discrete and continuous distributions.

Correlation- Karl Pearson's and Spearman's rank correlation.

Simple linear regression.

Testing of hypothesis- t-test, paired t-test, z-test, Chi-square test, F-test.

Test for goodness of fit.

One-way analysis of variance.

Non-parametric tests.

References

1. Adler, J (2014), R in a Nutshell, O'Reilly, US.
2. James, G., Witten, D., Hastie, T and Tibshirani, R. (2021). An Introduction to Statistical Learning- with applications in R, Springer.
3. James, G., Witten, D., Hastie, T., Tibshirani, R and Taylor, J. (2023). An Introduction to Statistical Learning- with applications in Python, Springer.
4. Lander, J.P (2018), R for Everyone, Pearson.
5. Shailaja, R.D and Sudha,G.P (2011), Micorarray Data (Statistical Analysis Using R), Narosa, India.
6. Sudha,G.P., Sharad.D.G and Shailaja, R.D (2012), Statistics Using R, Narosa.

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