Department of
Revised Syllabus of II Year Diploma Program (UG)

Title of Program:

Syllabus Structure (UG)

Year	Semester	Course No.	Course Code	Contact Hours	Credits (1Credit=15 H)	Total Marks
2	III	CT III	DST 303	30	2	75
		CL III	DSL303	60	2	75
	IV	CT IV	DST 404	30	2	75
		CL IV	DSL404	60	2	75
	Annual	CP II	DSP202	30	1	50
	Industrial and or Incubation and or Research and or Field Training			30	1	-
			Total	**240**	**10**	**350**

D: Diploma, *: Departmental Code (S: Statistics)

C: Course, T: Theory, L: Lab (Practical), P: Project

Total No. of Courses: 6 (Theory: 02, Practical: 02, Project: 01)

Theory and Practical: Semester, Project: Annual

Semester III

CT-III: DST 303: Title: Fundamentals of R programming
(Contact Hrs: 30 Credits: 2)

Learning Objectives:

Students will be able to

1. Understand basics of R – Programming

2. Perform different sampling methods using R – programming

Unit I: Basic of R programming (15)

1.1 Introduction to R, loops, functions in R
1.2 Vectors and vector arithmetic,
1.3 Data frames: creation using data frame, subset and transform commands
1.4 **Diagrams**: Simple bar diagram, subdivided bar diagram, multiple bar diagram, pie diagram, teem and leaf diagram
1.5 **Graphs**: Box plot Histogram (both equal and unequal class intervals), frequency Polygon, ogive curves.

Unit II: Measures of central tendency and Measures of dispersion (15)

3.1 Discrete and continuous random variables, ungrouped and grouped frequency distributions

3.2 mean, mode, median, Geometric mean and harmonic mean(for Discrete and continuous

   random variables)

3.3 Quartiles, deciles, percentiles (for Discrete and continuous random variables)

3.4Variance, standard deviation, coefficient of variation, mean deviation(for ungrouped and

grouped data sets)

3.5 Moment, Skewness and Kurtosis, Example.

Learning Outcomes:

After completion of the unit, Student is able to

1. Write simple R code to compute measures of central tendency and measures of dispersion

2. Visualize data through R-programming

Reference Books:

1.Vishwas R. Pawgi and Saroj A.Ranade : Statistical methods using R software

2. Michael J, STATISTICS an introduction Using R, Wiley, 2014

3. Peter Dalgaard, Introductory Statistics with R, Springer, 2014

CL-III: DS L303: **Title: Practical III**
(Contact Hrs: 60 Credits: 02)

Learning Objectives:

Students will be able to

1. Import and export data of different type.

2. Visualize data through R programming

List of Practical's (15)

1. Data input/output and R commands
2. Looping statements in R
3. User defined Functions in R
4. Graphical Representation of data using R-Software - I
5. Graphical Representation of data using R-Software - II
6. Sampling Technique-I (SRSWOR,SRSWR)
7. Sampling Technique-II (Stratified random sampling, systematic sampling)
8. Measures of central tendency–I
9. Measures of central tendency –II
10. Measures of Dispersion-I
11. Measures of Dispersion-II
12. Measures of Moment (Ungrouped Data)
13. Measures of Moment (Grouped Data)

14. Measures of Skewness and Kurtosis for ungrouped and grouped data
15. Regular expression in R

Learning Outcomes:

After completion of the unit, Student is able to

1. Write complex R code using different loops

2. Develop simple user defined function to perform simple tasks

Reference Books:

1. Vishwas R. Pawgi and Saroj A.Ranade : Statistical methods using R software
2. Michael J, STATISTICS an introduction Using R, Wiley, 2014
3. Peter Dalgaard, Introductory Statistics with R, Springer, 2014

Semester IV

CT-IV: DST 404: Title: R Programming for Statistics
(Contact Hrs: 30 Credits: 2)

Learning Objectives:

Students will be able to

1. Simulate random experiments

2. Compute probability using R- programming

Unit I: Probability Distributions and Testing of Hypothesis (15)

1.1 Simulation of random experiment
1.2 Computation of probabilities of Discrete and continuous Distributions
1.3 Testing of hypothesis
1.4 Examples

Unit II: Correlation and Regression (15)

2.1 Correlation: definition, computation of coefficient of correlation, types of correlation (multiple and partial correlation)
2.2 Regression: definition, computation of regression coefficients, fitting of lines of regression, multiple regression. Examples.

Learning Outcomes:

After completion of the unit, Student is able to

1. Perform testing procedure through R- programming

2. Perform correlation analysis using R – Programming

Reference Books:

1. Vishwas R. Pawgi and Saroj A. Ranade : Statistical methods using R software
2. Michael J, STATISTICS an introduction Using R, Wiley, 2014

3. Peter Dalgaard, Introductory Statistics with R, Springer, 2014

4. Verzani : Using R for introductory Statistics.

CL-IV:DSL404: Title (Practical): Practical IV
(Contact Hrs: 60 Credits: 02)

Learning Objectives:

Students will be able to

1. Understand model sampling from distribution through R – programming

2. Build simple and multiple regression model using R – Programming

List of Practical's (15)

1. Model sampling from Binomial Distribution
2. Model sampling from Hypergeometric Distribution
3. Model sampling from Uniform Distribution
4. Model sampling from Poisson Distribution
5. Model sampling from Exponential Distribution
6. Model sampling from Normal Distributions
7. Measures of Correlation Coefficient-I
8. Measures of Correlation Coefficient-II
9. Fitting of simple regression lines
10. Fitting of multiple regression lines
11. Multiple and Partial Correlation
12. Testing of hypothesis : T - test
13. Testing of hypothesis : Z – test
14. Testing of hypothesis : F – test
15. Testing of hypothesis : Chi-square test

Reference Books:

1. Vishwas R. Pawgi and Saroj A.Ranade : Statistical methods using R software
2. Michael J, STATISTICS an introduction Using R, Wiley, 2014
3. Peter Dalgaard, Introductory Statistics with R, Springer, 2014

CP-II: DSP202: Project
(Contact Hrs. 60, Credits: 2)

Industrial and or Incubation and or Research and or Field Training
(Contact Hrs. 60, Credits: 2)

BOS Sub-Committee		Expert Committee
1. Dr. D. S Jadhave	Chairman	1. Name of Academic Expert
2. Mr. P. H. Mahadik	Member	2. Name of Industrial Expert