CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA

COMPLEMENTARY COURSE IN STATISTICS

FOR BSc. PSYCHOLOGY

(CHOICE BASED CREDIT AND SEMESTER SYSTEM FOR UNDERGRADUATE CURRICULUM)

UNDER THE FACULTY OF SCIENCE

SYLLABUS

(FOR THE STUDENTS ADMITTED FROM THE ACADEMIC YEAR 2019 – '20 ONWARDS)

BOARD OF STUDIES IN STATISTICS (UG)

CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA - 680125, KERALA, INDIA

JUNE, 2019

Sem No.	Course Code	Course Title	Instructional Hours/week	Credit	Exam Hours	Ratio Ext: Int
1	STA 1C 02	DESCRPTIVE STATISTICS	4	3	2	4:1
2	STA 2C 02	REGRESSION ANALYSIS AND PROBABILITY THEORY	4	3	2	4:1
3	STA 3C 02	PROBABILITY DISTRIBUTIONS AND PARAMETRIC TESTS	5	3	2	4:1
4	STA 4C 02	STATISTICAL TECHNIQUES FOR PSYCHOLOGY	5	3	2	4:1

Question Paper Pattern

Type of Questions	Question number (From….. To …..)	Marks
Short Answer	01 to 12	Short answer type carries 2 marks each - 12questions **(Maximum Marks 20)**
Paragraph/ Problems	13 to 19	Paragraph/ Problem type carries 5 marks each –7questions **(Maximum Marks 30)**
Essay	20 to 21	Essay type carries 10 marks (1 out of 2) **(Maximum Marks 10)**
Total	**01 to 21**	**60**

Question Paper setter has to give equal importance to both theory and problemsin sections B and C.

SEMESTER 1

STA1C02 - DESCRIPTIVE STATISTICS

Contact Hours per Week: 4

Number of Credits: 3

Number of Contact hours:72

Course Evaluation: Internal – 15 Marks + External – 60 Marks

Objective

1. To generate interest in Statistics
2. To equip the students with the concepts of basic Statistics
3. To provide basic knowledge about Statistical methods

Course Outline

Module 1: A basic idea about data

Collection of data, primary and secondary data, organization, planning of survey and diagrammatic representation of data (10 Hours)

Module 2: Classification and tabulation

Classification of data, frequency distribution, formation of a frequency distribution, Graphic representation viz. Histogram, Frequency Curve, Polygon, Ogives, Bar diagram and Pie diagram (10 Hours)

Module 3: Measure of central tendency

Arithmetic Mean, Median, Mode, Geometric Mean, Harmonic Mean, Combined Mean, Advantages and disadvantages of each average (20 Hours)

Module 4: Measures of dispersion

Range, Quartile Deviation, Mean Deviation, Standard Deviation, Combined Standard Deviation, Percentiles, Deciles, Relative Measures of Dispersion, Coefficient of variation (16 Hours)

Module 5: Skewness and Kurtosis

Pearson's and Bowley's coefficient of skewness, Percentile Measure of Kurtosis (16 Hours)

References

1. Gupta, S.P. Statistical Methods. Sultan Chand and Sons: New Delhi.
2. Gupta, S.C., & Kapoor, V.K. Fundamentals of Applied Statistics. New Delhi: Sultan Chand and Sons.
3. Garret, H.E., &Woodworth, R.S. Statistics in Psychology and Education. Bombay: Vakila, Feffex and Simens Ltd.
4. Mood, A.M., Graybill, F.A and Boes, D.C. Introduction to Theory of Statistics.3rd Edition Paperback – International Edition.
5. Mukhopadhyay, P. Mathematical Statistics. New central Book Agency (P) Ltd: Calcutta.

Assignments/ Seminar

Assignments/Seminar are to be given to students. The purpose of the assignments/seminar is to provide practical exposure to the students.

SEMESTER 2

STA2C02 - REGRESSION ANALYSIS AND PROBABILITY THEORY

Contact Hours per Week: 4

Number of Credits: 3

Number of Contact hours:72

Course Evaluation: Internal – 15 Marks + External – 60 Marks

Objective

1. To make the students aware of various Statistical tools
2. To create awareness about probability

Course Outline

Module 1: Bivariate data

Relationship of variables, correlation analysis, methods of studying correlation, Scatter Diagram, Karl Pearson's Coefficient of Correlation, Calculation of Correlation from a 2-way table, Interpretation of Correlation Coefficient, Rank Correlation (11 Hours)

Module 2: Regression analysis

Linear regression, Regression Equation, Identifying the Regression Lines properties of regression coefficients, numerical problems (9 Hours)

Module 3: Partial and Multiple Correlation Coefficients

Multiple Regression Equation, Interpretation of Multiple Regression Coefficients (three variable cases only) (16 Hours)

Module 4: Basic probability

Sets, Union, Intersection, Complement of Sets, Sample Space, Events, Classical, Frequency and Axiomatic Approaches to Probability, Addition and Multiplication Theorems, Independence of Events (Up-to three events) (20 Hours)

Module 5: Random Variables and their probability distributions

Discrete and Continuous Random Variables, Probability Mass Function, Distribution Function of a Discrete Random Variable (16 Hours)

References

1. Gupta, S.P. Statistical Methods. Sultan Chand and Sons: New Delhi.
2. Gupta, S.C., &Kapoor, V. K. Fundamentals of Applied Statistics. New Delhi: Sultan Chand and Sons.
3. Garret, H.E., &Woodworth, R.S. Statistics in Psychology and Education. Bombay: Vakila, Feffex and Simens Ltd.
4. Mood, A.M., Graybill, F.A and Boes, D.C. Introduction to Theory of Statistics.3rd Edition Paperback –

International Edition.

5. Mukhopadhyay, P. Mathematical Statistics. New central Book Agency (P) Ltd: Calcutta.

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SEMESTER 3

STA3C02 - PROBABILITY DISTRIBUTIONS AND PARAMETRIC TESTS

Contact Hours per Week: 5

Number of Credits: 3

Number of Contact hours:90

Course Evaluation: Internal – 15 Marks + External – 60 Marks

Objective

1. To get a general understanding on various probability distributions
2. To familiarize the uses of Statistical test.

Course Outline

Module 1: Distribution Theory

Binomial, Poisson and Normal Distributions, Mean and Variance (without derivations), Numerical Problems, Fitting, Importance of Normal Distribution, standard normal distribution, simple problems using standard normal tables, Central Limit Theorem (Concepts only) (25 Hours)

Module2: Methods of Sampling

Random Sampling, Simple Random Sampling, Stratified, Systematic and Cluster Sampling, Non-Random sampling, Subjective sampling, Judgment sampling and convience sampling (20 Hours)

Module 3: Fundamentals of Testing

Type-I & Type-II Errors, Critical Region, Level of Significance, Power, pvalue, Tests of Significance (15 Hours)

Module 4: Large Sample Tests

Test of a Single, Mean Equality of Two Means, Test of a Single Proportion, and Equality of Two Proportions (10 Hours)

Module 5: Small Sample tests

Test of a Single Mean, Paired and Unpaired t-Test, Chi- Square Test of Variance, F-Test for the Equality of Variance, Tests of Correlation (20 Hours)

References

1. Gupta, S.P. Statistical Methods. Sultan Chand and Sons: New Delhi.
2. Gupta, S.C., & Kapoor, V. K. Fundamentals of Applied Statistics. New Delhi: Sultan Chand and Sons.
3. Garret, H.E., &Woodworth, R.S. Statistics in Psychology and Education. Bombay: Vakila, Feffex and

Simens Ltd.
4. Mood, A.M., Graybill, F.A and Boes, D.C. Introduction to Theory of Statistics.3rd Edition Paperback –International Edition.
5. Mukhopadhyay, P. Mathematical Statistics. New central Book Agency (P) Ltd: Calcutta.

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SEMESTER 4

STA4C02 - STATISTICAL TECHNIQUES FOR PSYCHOLOGY

Contact Hours per Week: 5

Number of Credits: 3

Number of Contact hours:90

Course Evaluation: Internal – 15 Marks + External – 60 Marks

Objective

1. To make the students aware of various Statistical test in different areas of Psychology
2. To give knowledge about applications of Statistics in different areas of Psychological studies.

Course Outline

Module 1: Analysis of Variance

Assumptions, One-way and Two-way Classification with Single Observation per Cell, Critical Difference (20 Hours)

Module 2: Non-Parametric tests

Chi-square Test of Goodness of Fit, Test of Independence of Attributes, Test of Homogeneity of Proportions (20 Hours)

Module 3: Sign Test

Wilcoxon's Signed Rank Test, Wilcoxon's Rank Sum Test, Run Test and Krushkal-Wallis Test (20 Hours)

Module 4: Factorial Design

Basics of factorial Design, Factorial experiments and their uses in Psychological studies, Concepts of 22, 23 factorial experiments (without derivation), simple problems (15 Hours)

Module 5: Preparation of Questionnaire

Scores and Scales of Measurement, Reliability and Validity of Test Scores (15 Hours)

References

1. Gupta, S.P. Statistical Methods. Sultan Chand and Sons: New Delhi.
2. Gupta, S.C., & Kapoor, V. K. Fundamentals of Applied Statistics. New Delhi: Sultan Chand and Sons.
3. Garret, H.E., &Woodworth, R.S. Statistics in Psychology and Education. Bombay: Vakila, Feffex and Simens Ltd.

4. Mood, A.M., Graybill, F.A and Boes, D.C. Introduction to Theory of Statistics.3rd Edition Paperback –International Edition.
5. Douglas C. Montgomery. *Design and Analysis of Experiments*.9th Edition.

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