

ST. JOSEPH'S DEGREE & PG COLLEGE

(Autonomous) - Affiliated to Osmania University

Re-accredited by NAAC (3rd Cycle)

Basheerbagh, King Koti Road, Hyderabad – 29

LEARNING OUTCOMES BASED CURRICULUM FRAMEWORK (LOCF) FOR UNDERGRADUATE PROGRAMMES

FACULTY OF SCIENCES DEPARTMENT OF MATHEMATICS & STATISTICS COURSE: STATISTICS



**B.Sc Data Science (Honors)
(w.e.f. 2024 – 2025)**

Semester-I

| Scheme of Instruction | Scheme of Examination |
|---|---|
| Course Code: BSP-1-ST-24T | Course Title : Basic Statistics and Probability |
| Credits : 4 | Max. Marks : 100 Marks |
| Category : DSC | Internal Examination : 30 Marks |
| Hours/Week : 4 | SBT :10 Marks |
| Total duration Hrs : 60 Hrs | External Examination : 60 Marks |
| Instruction Mode: Lecture + Practical | Exam Duration : 3 Hrs |
| Course Objectives: | |
| To equip students with the skills to understand, classify, and analyze diverse data types through comprehensive data collection methodologies, fostering proficiency in descriptive statistics and its real-life applications, while establishing a solid foundation in probability theory. | |

| Course Outcomes: By the end of the course the student would be able to | Cognitive Level |
|--|-----------------|
| CO1: Apply the knowledge of collection, classification, analysis and interpretation of primary and secondary data and to apply the measures of central tendency and dispersion. | BL4 |
| CO 2: Analyze and solve complex probability problems, conditional probability, independence of events, addition and multiplication theorems, Boole's inequality, Bayes' theorem, and counting methods. | BL5 |
| CO 3: Analyze and manipulate random variables, including understanding discrete and continuous distributions, functions of random variables, bivariate distributions, joint, marginal, and conditional distributions. | BL4 |
| CO 4: Analyze and compute mathematical expectations, moments, covariance, and inequalities, as well as understand and apply the central limit theorem and properties of moment generating functions in practical applications. | BL4 |

Semester-I

| Scheme of Instruction | Scheme of Examination |
|---|---|
| Course Code: BSP-1-ST-24P | Course Title : Basic Statistics and Probability (Practical) |
| Credits : 1 | Max. Marks : 50 Marks |
| Category : DSC | Internal Examination : 20 Marks |
| Hours/Week :3 | External Examination : 30 Marks |
| Total duration Hrs : 45 Hrs | Exam Duration : 3 Hrs |
| Instruction Mode: Practical | |
| Course Objective: | |
| To proficiently analyze and present data using diagrammatic and graphical techniques in MS Excel and SPSS, while mastering computation methods for measures of central tendency, dispersion, non-central and central moments, as well as coefficients of skewness and kurtosis. | |

| Course Outcomes: By the end of the course the student would be able to | Cognitive Level |
|---|-----------------|
| CO1: Analyze, visualize, and interpret data using MS-Excel and SPSS, encompassing diagrammatic and graphical presentations such as bar charts, pie charts, histograms, frequency polygons, and ogives to solve manual and practical problems. | BL4 |
| CO 2: Solve problems related to absolute and relative measures of dispersion, central and non-central moments, coefficients of skewness, and kurtosis effectively using MS-Excel and SPSS. | BL5 |

Semester-II

| Scheme of Instruction | Scheme of Examination |
|---|---|
| Course Code: DCPD-2-ST-24T | Course Title :Discrete and Continuous Probability Distributions |
| Credits : 4 | Max. Marks : 100 Marks |
| Category : DSC | Internal Examination : 30 Marks |
| Hours/Week : 4 | SBT :10 Marks |
| Total duration Hrs : 60 Hrs | External Examination : 60 Marks |
| Instruction Mode: Lecture + Practical | Exam Duration : 3 Hrs. |
| Course Objectives: | |
| To equip students with a comprehensive understanding of discrete and continuous probability distributions, emphasizing properties and real-life applications, along with exploring approximations and limiting cases. | |

| Course Outcomes: By the end of the course the student would be able to | Cognitive Level |
|--|------------------------|
| CO1: Analyze and interpret data related to uniform and Bernoulli distributions, probability mass functions of binomial and Poisson distributions, and their respective properties with real-life applications. | BL4 |
| CO 2: Analyze and interpret data related to negative binomial, geometric, and hyper geometric distributions, exploring their properties with real-life applications. | BL4 |
| CO 3: Analyze and interpret data related to normal distributions, exploring properties with real-life applications. | BL4 |
| CO 4: Analyze and interpret data related to rectangular, exponential, gamma, and beta distributions, exploring with real-life applications. | BL4 |

Semester-II

| Scheme of Instruction | Scheme of Examination |
|---|--|
| Course Code: DCD-2-ST-24P | Course Title : Discrete and Continuous Distributions (practical) |
| Credits : 1 | Max. Marks : 50 Marks |
| Category : DSC | Internal Examination : 20 Marks |
| Hours/Week : 3 Hrs. | SBT :NA |
| Total duration Hrs : 45 Hrs. | External Examination : 30 Marks |
| Instruction Mode: Practical | Exam Duration : 3 Hrs. |
| Course Objectives: | |
| To equip students with a comprehensive understanding of discrete and continuous probability distributions, emphasizing properties and real-life applications, along with exploring approximations and limiting cases. | |

| Course Outcomes: By the end of the course the student would be able to | Cognitive Level |
|--|------------------------|
| CO1: Solve practical problems manually and also using MS-Excel and SPSS to fit various discrete probability distributions. | BL4 |
| CO 2: Apply manual and practical problem-solving techniques using MS-Excel and SPSS to fit various continuous probability distributions. | BL4 |