| Course Code | | Year | II | Semester | II |
|---|---|---|---|---|---|
| Course Category | Basic Science | Branch | CSE,ME,CSD CSE(AIML),IT | Course Type | Theory |
| Credits | 3 | L-T-P | 3-0-0 | Prerequisites | Basic concepts of probability |
| Continuous Internal Evaluation | 30 | Semester End Evaluation | 70 | Total Marks | 100 |

## Course Outcomes

Upon successful completion of the course the student will be able to

| | |
|---|---|
| CO1 | **Understand** the basic concepts of probability and statistics(L2). |
| CO2 | **Calculate** the measures of central tendencies, correlation and regression to the given data and apply appropriate probability distributions to the given problem (L3). |
| CO3 | **Apply** the concepts of testing hypothesis for large and small samples(L3). |
| CO4 | **Analyze** the concepts of probability, correlation and regression to real life problems(L4). |
| CO5 | **Analyze** the given data and identify appropriate test statistic to test given hypothesis for statistical decision(L4). |

## Contribution of Course Outcomes towards achievement of Program Outcomes& Strength of correlations (3:High, 2: Medium, 1:Low)

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | | | | | | | | | | | |
| CO2 | 3 | | | | | | | | | | | |
| CO3 | 3 | | | | | | | | | | | |
| CO4 | | 3 | | | | | | | | | | |
| CO5 | | 3 | | | | | | | | | | |

## Syllabus

| Unit No. | Syllabus | Mapped CO's |
|---|---|---|
| 1 | **Measures of Central Tendency and Probability:** **Measures of central tendency:** Mean, Median, Mode **Probability:** Probability axioms, addition law and multiplicative law of probability, conditional probability, Baye's theorem (without proof). | CO1,CO2, CO4 |
| 2 | **Random Variables and Probability Distributions:** Random variables (discrete and continuous), probability density function, probability distribution-Binomial, Poisson and normal distribution-their Properties(without proof), mathematical expectation and variance. | CO1,CO2, CO4 |
| 3 | **Correlation, Regression:** Correlation, correlation coefficient, rank correlation regression, lines of regression, regression coefficients, principle of least squares and curve fitting (straight Line, parabola and exponential curves). | CO1,CO2, CO4 |
| 4 | **Testing of Hypothesis and Large Sample Tests:** Formulation of null hypothesis, alternative hypothesis, the critical region, two types of errors, level of significance. **Large Sample Tests:** Test for single proportion, Difference of proportions, test for single mean and difference of means. Confidence interval for parameters in one sample and two sample problems | CO1,CO3, CO5 |
| 5 | **Small Sample Tests:** Student t-distribution(test for single mean, two means And paired t-test), testing of equality of variances (F-test),$\chi 2$-test for goodness of fit, $\chi 2$- test for independence of attributes. | CO1,CO3, CO5 |

## Learning Resources

**Text Books**

1. S.C.Gupta and V.K.Kapoor, Fundamentals of Mathematical Statistics, 11/e, Sultan Chand & Sons Publications, 2012.
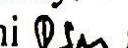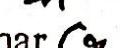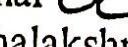2. Miller and Freunds, Probability and Statistics for Engineers,7/e,Pearson,2008

**Reference Books**

1. S. Ross, A First Course in Probability, Pearson Education India,2002.
2. Dr.T.K.V. Iyengar, Dr. B. Krishna Gandhi, S. Ranganatham, Dr.M.V.S.S.N. Prasad, Probability& Statistics, Publications: S. Chand, 4th Revised Edition, 2012.

**e-Resources & other digital material**

1. https://nptel.ac.in/courses/111/106/111106150/
2. https://nptel.ac.in/courses/111105035
3. https://onlinecourses.nptel.ac.in/noc22_mg31/preview
4. PVPSIT FED- Moodle

Mathematics Faculty:
1. Dr. R. Chudamani
2. Dr. P. Padmaja
3. Mr. K. Kiran kumar
4. Dr. M. Prameela
5. Mr. G. Kiran kumar
6. Dr. V. Seethamahalakshmi
7. Mr. A.C.S. Babu
8. Dr. V.S.N. Malleswari
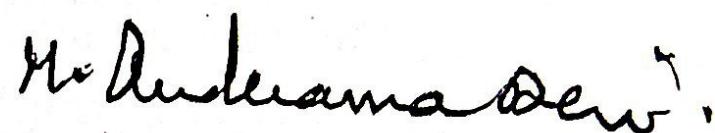
Head
Freshman Engineering Department
PVP Siddhartha Institute of Technology
Kanuru, VIJAYAWADA-520 007.