

15ABS09-PROBABILITY AND STATISTICS

(Common for CE, ME and CSE)

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Objectives: To help the students in getting a thorough understanding of the fundamentals of probability and usage of statistical techniques like testing of hypothesis, Statistical Quality Control and Queuing theory

UNIT – I

Basic concepts of Probability – Random variables – Expectation – Discrete and continuous Distributions – Distribution functions. Binomial, Poisson and Normal distributions – Related properties.

UNIT – II

Test of Hypothesis: Population and Sample - Confidence interval of mean from Normal distribution - Statistical hypothesis - Null and Alternative hypothesis - Level of significance. Test of significance - Z test for means and proportions.

UNIT – III

Small samples - t- test, F-test and Chi-square test (testing of goodness of fit and independence).

UNIT – IV

Statistical Quality Control: Concept of quality of a manufactured product -Defects and Defectives - Causes of variations - Random and assignable - The principle of Shewhart Control Chart-Charts for attribute and variable quality characteristics- Constructions and operation of $\bar{X}$ - Chart, R-Chart, p - Chart and C-Chart.

UNIT – V

Queuing Theory: Pure Birth and Death process, M/M/1 & M/M/S & their related simple problems.

Text Books:

1. Probability and Statistics for Engineers by Richard A. Johnson, 8th edition, PHI Learning Private Ltd.-2011.
2. Probability & Statistics by E. Rukmangadachari & E. Keshava Reddy, Pearson Publisher.
3. Probability & Statistics for engineers by Dr. J. Ravichandran WILEY-INDIA publishers.

References:

1. Operations Research by S.D. Sharma, KEDAR NATH RAM NATH, Publications.
2. Statistical methods by S.P. Gupta, S.Chand publications.

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3. Probability and Statistics for Engineers and Scientists by Ronald E. Walpole, Sharon L. Myers and Keying Ye, Pearson eighth edition.
4. Higher Engineering Mathematics, by B.V.Ramana, Mc Graw Hill publishers.

Outcomes:

At the end of the course, the student will be able to analyze the problems of engineering & industry using the techniques of Probability, Statistics and Queuing theory and draw appropriate inferences.

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