

Probability and Statistics

Course Objective:

To provide the students with practical knowledge of the principles and concept of probability and statistics and their applications in engineering field.

1.Descriptive Statistics and Basic Probability(6 hours)

- a.Introductions in statistics and its importance in engineering
- b.Describing data with graphs (bar, pie, line diagram, box plot)
- c.Describing data with numerical measure (measuring center, measuring variability)
- d.Basic probability additive law, multiplicative law, Bayes' theorem

2.Discrete Probability Distribution(6 hours)

- a.Discrete random variable
- b.Binomial probability distributions
- c.Negative binomial distribution
- d.Poisson distribution
- e.Hyper geometric distributions

3.Continuous Probability Distributions(6 hours)

- a.Continuous random variable and probability densities
- b.Normal distribution
- c.Gama distribution
- d.Chi-square distribution

4.Sampling Distribution(5 hours)

- a.Population and sample
- b.Central limit theorems
- c.Sampling distribution of sample mean
- d.Sampling distributing of sampling proportion

5.Correlation and regression(6 hours)

- a.Least square methods
- b.An analysis of variance of linear regression model
- c.Inferences concerning least square method
- d.Multiple correlation and regression

6.Inference concerning mean(6 hours)

- a.Point estimation and interval estimation
- b.Test of hypothesis
- c.Hypothesis test concerning one mean
- d.Hypothesis test concerning two mean
- e.One way ANOVA

7.Inference concerning proportion(6 hours)

- a.Estimation of proportions
- b.Hypotheses concerning one proportion
- c.Hypotheses concerning two proportions
- d.Chi-square test of independence

8. Application of computer on statistical data computing(4 hours)
- a.Application of computer in computing statistical problem e.g. Scientific
 - b.Calculator, EXCEL, SPSS, Matlab, etc.

References:

- 1.Richard A. Johnson, "Probability and statistics for engineers 7th edition, Miller and Freund's publication
- 2.Jay L devorce, probability and statistics for engineering and the sciences, brooks/ Cole publishing company, Monterey, California, 1982.
- 3.Richard. Levin, David s Rubin, statistics for management. Prentice hall publication
- 4.Mendenhall beaver, introduction probability and statistics 12th edition, Thomson brooks/Cole

Evaluation scheme:

The questions will cover the entire chapter of the syllabus. The evaluation scheme will be as indicated in the table below:

Chapter	Hour	Marks Distribution*
1	6	12
2	6	10
3	6	10
4	6	10
5	6	10
6	6	10
7	6	10
8	4	8
Total	45	80

***Note: There may be minor deviation in marks distribution**
