

MATH408: Probability and Statistics

Textbook: Engineering Statistics

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Software : Minitab for Windows, Release 11 (installed at the Applied Mathematics Laboratory)

Tentative Course Syllabus

| Week | TOPICS | Section(s) |
|-----------|--|----------------------|
| 1 | Introduction to Statistics; Role of Statistics in Engineering; Illustrative examples; Introduction to Minitab (supplement); Importance of data summary and display. | 1.1 - 1.5, 2.1 - 2.2 |
| 2 | Data summary and presentation; Use of Minitab in presenting data summary; analysis and discussion of results; the need for probability. Illustrative example using practical data. | 2.2 - 2.5, 3.1 |
| 3 | Introduction to Probability; basic concepts; random variables; probability functions. | 3.2 - 3.4, 3.7 |
| 4 | Mean and standard deviation of discrete and continuous random variables; Percentile of a random variable; Normal distributions; normal probability plot; Use of Minitab in generating random data and normal probability plot; | 3.4 - 3.7 |
| 5 | Binomial and Poisson random variables; Normal approximations. Correlation and independence; | 3.8 - 3.11 |
| 6 | Central limit theorem; Illustrative examples using Minitab. Decision making for a single sample; Use of Minitab. | 3.12, 4.1-4.3 |
| 7 | Decision making for a single sample (cont'd); use of Minitab. | 4.3 - 4.8 |
| 8 | Decision making for two samples. Use of Minitab. | 5.1 - 5.4 |
| 9 | Decision making for two samples (cont'd). Use of Minitab. | 5.4 - 5.7 |
| 10 | ANOVA; Introduction to Building Empirical Models; Illustrative examples using Minitab. | 5.8, 6.1 - 6.3 |
| 11 | Introduction to Design of Experiments; Illustrative examples using Minitab. | 7.1 - 7.3 |
| 12 | FINAL EXAM | |

NOTE: Homework problems will be assigned during the class lectures. There will be periodic quizzes that will be given through out the quarter. The software, MINITAB, will be used extensively throughout the course. Some of our classes will be held in the *Applied Mathematics Laboratory*.