

Probability Models in Information Engineering

Department of Electrical Engineering
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Syllabus Outline

- Probability
Definitions, rules and axioms, independent and dependent events, conditional probability, Bayes' rule, combinatorics
- Random Variables
Discrete and continuous random variables, distribution functions, multiple random variables, expected values, conditional distribution functions and expectation
- Random Processes
Stationarity, correlation, ergodicity, Poisson processes
- Applications of Probability Modelling
Detection, estimation, queueing theory, data compression

Intended Learning Outcomes

On successful completion of this course, you will

- Understand basic concepts and theories in probability
- Understand random variables and their distributions
- Understand random processes
- Apply probability, random variables and random processes to solve real-life problems including those in engineering areas such as signal processing, communications and networking
- Perform computer simulation to formulate, solve, analyze problems related to probability

Teaching Schedule

Date	Week	Remark
9 Jan.	1	
16 Jan.	2	
30 Jan.	3	
6 Feb.	4	Assignment 1
13 Feb.	5	Project 1
20 Feb.	6	Assignment 2
27 Feb.	7	Test 1
6 Mar.	8	
13 Mar.	9	
20 Mar.	10	Assignment 3
27 Mar.	11	Test 2
3 Apr.	12	
10 Apr.	13	Project 2

Assessment

Coursework:	50%
▪ Assignments	10%
▪ Projects	10%
▪ Tests:	30%
Examination:	50%

To pass the course, **at least 30%** of coursework **AND** examination marks are required.

Act of academic dishonesty (e.g., plagiarism, submission for assessment of material that is not your own work, cheating in test or examination) will be liable to disciplinary actions

Teaching Assistants:

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