

COURSE DESCRIPTION

Department and Course Number	CS 455	Course Coordinator	Sprague
Course Title	Probability and Statistics in Computer Science	Total Credits	3

Current Catalog Description

Introduction to Probability and Statistics with applications in Computer Science. Counting, permutations and combinations. Probability, conditional probability, Bayes theorem. Standard probability distributions. Measures of central tendency and dispersion. Central Limit Theorem. Regression and correlation. Hypothesis testing. Random number generation. Random algorithms. Estimating probabilities by simulation. Genetic algorithms.

Textbook

Milton & Arnold, Introduction to Probability and Statistics: Principles and Applications for Engineering and the Computing Sciences, McGraw-Hill.

References

None

Course Goals

Provide a basic foundation in Probability and Statistics which will prepare students to apply these concepts in computational settings, including the design and analysis of simulations, random number generation, and genetic algorithms.

Prerequisites by Topic

CS 303 – Algorithms and Data Structures, with a grade of “C” or better.

Major Topics Covered in the Course

Probability, Statistics, Random numbers, Random algorithms.

Laboratory projects (specify number of weeks on each)

Five programming assignments. 3 weeks each.

Five written homework assignments, 3 weeks each.

Estimate CSAB Category Content

	CORE	ADVANCED		CORE	ADVANCED
Data Structures	_____	_____	Computer Organization and Architecture	_____	_____
Algorithms	6		Concepts of Programming Languages	_____	_____
Software Design	_____	_____			

Oral and Written Communications

Every student is required to submit at least ___5___ written reports (not including exams, tests, quizzes, or commented programs) of typically ___2___ pages and to make ___0___ oral presentations of typically ___0___ minutes duration. Include only material that is graded for grammar, spelling, style, and so forth, as well as for technical content, completeness, and accuracy.

Social and Ethical Issues

None

Theoretical Content

See Major Topics

Problem Analysis

Analysis of problems in probability and statistics as applied to computer science.

Solution Design

Design of solutions to problems in probability and statistics as applied to computer science.