DAVIS UNIVERSITY

COURSE SYLLABUS

MTH220: INTRODUCTION TO PROBABILITY

COURSE SYLLABUS FOR: INTRODUCTION TO PROBABILITY

CREDIT HOURS: 5 CREDITS

INSTRUCTOR:

INSTRUCTOR EMAIL:

INSTRUCTOR OFFICE HOURS:

COURSE DESCRIPTION: Topics include probability spaces, random variables, conditional expectation and probability, independence, joint distributions, consequences, conditional distribution, the Central Limit Theorem.

PREREQUISITES: Analytic Geometry and Calculus II

TEXT: Probability and Simulation, Giray Ökten, Springer Undergraduate Texts in Mathematics and Technology, Springer, 2020. Softcover ISBN: 978-3-030-56069-0. E-book ISBN: 978-3-030-56070-6

Introduction to Probability, David F. Anderson, Timo Seppäläinen, and Benedek Valkó; ISBN: 978110841585

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- Copy the original sentence pattern, substitution synonyms for key words.
- Neglect to indicate the source of the original material.

GRADING POLICY

Three Homeworks	40%
Module quizzes	5%
Midterm	25%
Final Exam	30%
Total	100%

COURSE GRADE:

A+ = 97%–100%	C+ = 77%–79%
A = 93%-96%	C = 73%–76%
A– = 90%–92%	C– = 70%–72%
B+ = 87%–89%	D+ = 67%–69%
B = 83%–86%	D = 63%–66%
B– = 80%–82%	D– = 60%–62%
	F = Below 60%

TENTATIVE COURSE OUTLINE:

Module/Units	Content Covered	Assignments & Assessment
Module 1	1.1 Axioms of probability 1.2 Random sampling 1.3 Project: Verifying polynomial identities 1.4 Conditional probability and randomized surveys 1.5 Bayes' theorem	Module quiz 1
Module 2	2.1 Discrete random variables 2.2 Expectation of a function of a random variable 2.3 Discrete unform random variables 2.4 Bernoulli, binomial, geometric, Poisson random variables 2.5 Conditional expectation 2.6 Markov's inequality and Chebyshev inequality	Module quiz 2 Homework 1
Module 3	3.1 Uniform random variables and strong law of large numbers 3.2 Exponential and normal random variables, central limit theorem	Module quiz 3 Midterm exam
Module 4	6.1 Joint distribution of discrete random variables 6.2 Jointly continuous random variables 6.3 Joint distributions and independence 6.4 Further multivariate topics	Module quiz 4 Homework 2
Module 5	7.1 Sums of independent random variables	Module quiz 5
Module 6	8.2 Sample mean and sample variance 8.4 Covariance and correlation 8.5 The bivariate normal distribution 8.6 Finer points	Module quiz 6 Homework 3
Module 7	10.1 Conditional distribution of a discrete random variable 10.2 Conditional distribution for jointly continuous random variables 10.3 Conditional expectation	Module quiz 7

Module 8	8.1 Moment generating functions: discrete random variables 8.2 Moment generating functions: continuous random variables 8.3 Moment generating functions of sums of independent random variables	Module quiz 8 Final exam