



COMP_SCI 5206 101
Prob & Apps in Computing
2025 Fall Semester

Instructor Information



Venkata Sriram Siddhardh Nadendla

Email: nadendla@mst.edu

Office: 314 Computer Science

Office Hours

Thu 3pm - 4pm

Phone: 5733414090

Preferred Method of Contact: Email

Syllabus Changes

While I've done my best to plan the semester thoughtfully, there may be times when adjustments to the syllabus are necessary. If changes do occur, I'll communicate them clearly and promptly. Any updates will be made with your success in mind, and every effort will be made to avoid changes that may potentially penalize students. Please inform me if any changes negatively impact your ability to succeed.

Course Information

Meeting Location: Innovation Lab 00214

Meeting Days: TuTh

Meeting Time: 12:30PM - 01:45PM

Modality: In-Person

Additional Course Information From Instructor

This is a course on the fundamentals of probability geared towards early graduate and senior undergraduate students who are interested in a rigorous development of the subject. The course covers most of the topics in STAT 3115 (sample space, random variables, expectations, Bernoulli and Poisson processes, limit theorems) but at a faster pace and in significantly greater depth. There is also a number of additional topics such as: language, terminology, and key results from measure theory; multivariate distributions; deeper understanding of conditional distributions and expectations; and Markov chains and Martingales. Applications of probability in Artificial Intelligence and Networking will be given special attention.

Regarding textbooks, the instructor will present in-depth material from a wide range of reference books. However, the flow of lectures and homework assignments will be loosely based on the following book:

Probability and Random Processes

ISBN: 9780198847601

Authors: Geoffrey Grimmett, David Stirzaker

Publication Date: 2020-01-01

Students will be responsible for the material contained in lecture notes and other handouts. The lecture notes are somewhat sparse with fewer examples, primarily due to limited class hours. Therefore, students are strongly encouraged to read as many reference books listed below, as possible.

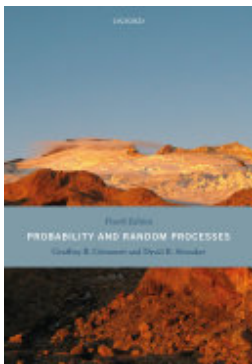
Course Goals

At the end of this course students will:

- master the foundations of probability using measure theoretic concepts.
- apply notions from measure-theoretic probability concepts to solving problems in computing (e.g. AI, networking).
- master fundamental tools and techniques underlying probabilistic modeling and analysis.

Course Materials

*Any required or optional course materials for this class should be included in the **Miner Book Bundle** or may be purchased individually. For more information about the Miner Book Bundle, visit the [Miner Book Bundle](#) information page. This site includes information about the book bundle works, as well as, information on opting out.*



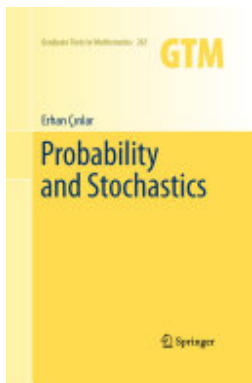
Probability and Random Processes

ISBN: 9780198847601

Authors: Geoffrey Grimmett, David Stirzaker

Publication Date: 2020-01-01

Required



Probability and Stochastics

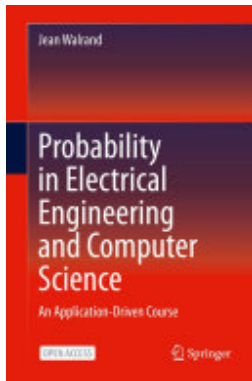
ISBN: 9780387878591

Authors: Erhan Çinlar

Publisher: Springer Science & Business Media

Publication Date: 2011-02-21

Optional



Probability in Electrical Engineering and Computer Science

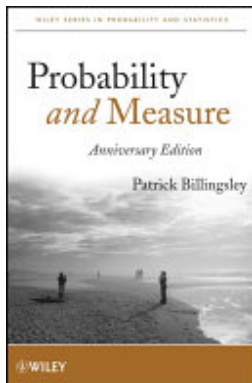
ISBN: 9783030499952

Authors: Jean Walrand

Publisher: Springer Nature

Publication Date: 2021-06-22

Optional



Probability and Measure

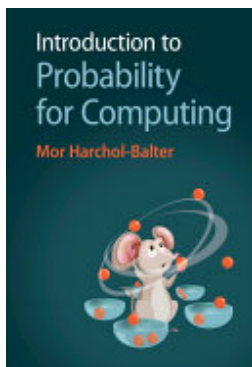
ISBN: 9781118122372

Authors: Patrick Billingsley

Publisher: John Wiley & Sons

Publication Date: 2012-02-28

Optional



Introduction to Probability for Computing

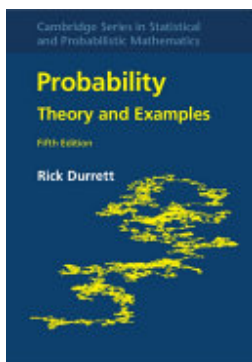
ISBN: 9781009309073

Authors: Mor Harchol-Balter

Publisher: Cambridge University Press

Publication Date: 2023-09-28

Optional



Probability

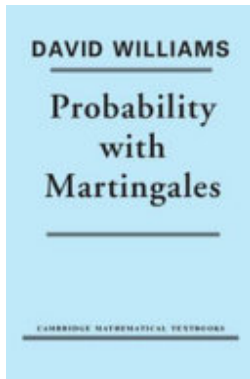
ISBN: 9781108473682

Authors: Richard Durrett, Rick Durrett

Publisher: Cambridge University Press

Publication Date: 2019-04-18

Optional



Probability with Martingales

ISBN: 9780521406055

Authors: David Williams

Publisher: Cambridge University Press

Publication Date: 1991-02-14

Optional

Generative AI (GAI) usage is NOT allowed in this course



**No use of GAI is acceptable for use on any graded class activity.
Use of GAI may result in a zero for the assignment.**

Your instructor does not allow the use of GAI on assignments or projects in this class.

Please check your instructor's GAI course policies for more information.

Contingency Information - in case of Illness or Cancellation

Instructor Illness or Unavailability:

*If the instructor ill or otherwise unable to attend class in-person, alternative arrangements will be made to compensate for the loss of lecture time. To the best of his abilities, the instructor will try to teach the specific lecture in an **online synchronous** format. If the online synchronous mode of instruction is infeasible, such lectures will be pre-recorded and provided to students.*

Student Illness:

Students should contact Student Health Services (mstshs@mst.edu), 573-341-4284, if they become ill or are unable to attend class or take tests on campus.

If a student is isolating, the student will receive an absence note from Student Health and not Student Support and Community Standards (Care Management). **The student will be responsible of forwarding the absence note to their instructors.**

Departmental Contact

First point of contact for questions, issues, and concerns is the instructor of your course.

If you have a situation that you cannot resolve through discussion with the instructor, you may contact the department chair.

Name: Dr. Seung-Jong (Jay) Park

Title: Kummer Endowed Professor and Department Chair, Computer Science

Email: seung-jong.park@mst.edu

Grading Policies

Assignment breakdown of grade calculation

| Assignment | Percentage of Grade |
|--------------------------|---------------------|
| In-class activities (6) | 30% |
| Homework assignments (6) | 30% |
| Examinations (2) | 40% |
| | Total: 100% |

Grading Scale Information

Course grading scale

| Letter Grade | Points |
|--------------|-----------------|
| A | [90,100] points |
| B | [75, 90) points |
| C | [60, 75) points |
| D | [50, 60) points |
| F | [0, 50) points |

STUDENT ASSISTANCE, RESOURCES & UNIVERSITY POLICIES

Up-to-date information about student assistance, resources, and university policies can be found at:

[Syllabus Information – Academic Achievement and Enrichment | Missouri S&T](#)

Some of the information contained in this document is:

- Academic Dishonesty & Integrity Policies
- Student Resources
 - Educational & Tutoring
 - Respiratory & Other Illness Policy
 - Health & Well-Being
 - Other Support Services
- Missouri S&T and UM System Policies

Emergency Info

[Campus Police Emergency Quick Reference](#)

If you or anyone in your class is in danger, remain calm and call 911.