Syllabus

Math 471 Advanced Probability. Fall 2023.

Binghamton University

- Instructor: Vladislav Kargin
- Office: WH-136
- Meeting time and location: MWF – 8:00-9:30 – WH 329
- Office hours: MWF – 9:50-10:50

This course is a 4-credit course, which means that in addition to the scheduled lectures/discussions, students are expected to do at least 9.5 hours of course-related work each week during the semester. This includes things like: completing assigned readings, participating in lab sessions, studying for tests and examinations, preparing written assignments, completing internship or clinical placement requirements, and other tasks that must be completed to earn credit in the course.

Prerequisite

Probability Theory (MATH 501)

Description

This course is an introduction to the advanced concepts of probability theory. It covers topics such as: Measure theory, Probability spaces, Random variables, Conditional Expectations, Stochastic processes, Martingales, Limit Theorems Large deviations

The course is intended for students who have a strong foundation in probability theory.

Recommended Texts

Durrett “Probability: Theory and Examples” 5th edition, pdf available at PTE.

Piazza

We will use Piazza (“http://piazza.com/”) for communication. All announcements will be sent to the class using Piazza.

Homework Policies

The homework will not be graded with the exception of some marked problems. The solution for these problems must be typed in LaTeX, typeset to pdf and submitted by the due date. The late or hand-written or non-LaTeX solutions will not be accepted. All homework problems can be on exams.

Exam

There will be a midterm and a final exam focusing on the theoretical part of the course. Final is cumulative.

Project

You are supposed to prepare a project for this course and make a presentation on the project. The project should cover some topic in probability theory. You can choose your own topic. It might be a topic, which is not covered by the lecturer, or it might be a recent paper in a mathematical journal. You are supposed to give a 30-minute presentation on the topic, which should be a lecture to your fellow students. You may choose to do a blackboard lecture or a slide presentation, as you prefer. You presentation will be graded on the following criteria:

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  • Clarity: Your presentation should be clear and easy to understand.
  • Engagement: Your presentation should be engaging and interesting.
  • Answering questions: You should be able to answer questions from the audience about your topic.
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Grading

- Homework (25%)
- Midterm exam (25%)
- Project (25%)
- Final exam (25%)

Tentative schedule

Midterm	Oct 9
Project Proposal	due Oct 30
Preliminary report	due Nov 13
Project presentations	Nov 27 - Dec 1
Final Report	due Dec 4
Final Exam	As scheduled by the University, Dec 11 - Dec 15