האוניברסיטה העברית בירושלים
THE HEBREW UNIVERSITY OF JERUSALEM

The Hebrew University of Jerusalem

Syllabus

PROBABILITY THEORY (2) - 80421

Last update 10-03-2025

HU Credits: 4

Degree/Cycle: 1st degree (Bachelor)

Responsible Department: Mathematics

Academic year: 0

Semester: 2nd Semester

Teaching Languages: Hebrew

Campus: E. Safra

Course/Module Coordinator: Ohad Noy Feldheim

Coordinator Email: ohad.feldheim@mail.huji.ac.il

Coordinator Office Hours: By appointment

Teaching Staff:

Prof. Feldheim Ohad

Course/Module description:
A second course in probability theory, from the standpoint of measure theory. The course revolves around stochastic processes, their invariants and convergence. These topics are studies via classical tools such as characteristic function, and modern tools such as martingales.

Course/Module aims:
Same as in learning outcomes.

Learning outcomes - On successful completion of this module, students should be able to:
Establishing probability theory on the shoulders of measure thoery.

Ability to prove the fundamental theorems in that theory in a general form.

Relating probability theory and harmonic analysis via characteristic functions.

Understanding discrete stochastic processes through the notion of a martingale.

familiarity with the wiener process (Brownian motion), and deriving its basic properties from simple random walks.

Attendance requirements(%):
0

Teaching arrangement and method of instruction: Lecture

Course/Module Content:
Convergence of random variables
Law of large numbers
Characteristic functions
Central limit theorem
Martingales
Other or different topic may be taught

Required Reading:
Lecture notes

Additional Reading Material:
Hebrew Notes

Probability with martinagles / Williams

Probability: Theory and Examples Rick Durrett

Grading Scheme:
Home Exam % 100

Additional information:
none