האוניברסיטה העברית בירושלים
THE HEBREW UNIVERSITY OF JERUSALEM

Syllabus

PROBABILITY THEORY (2) - 80421

Last update 27-07-2020

HU Credits: *3*

Responsible Department: *Mathematics*

Academic year: *0*

Semester: *2nd Semester*

Teaching Languages: *Hebrew*

Campus: *E. Safra*

Course/Module Coordinator: *Benjamin Weiss*

Coordinator Email: *weiss@math.huji.ac.il*

Coordinator Office Hours: *By appointment*

Teaching Staff:
Prof Ori Gurel-Gurevich

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

Required Reading:
Lecture notes

Additional Reading Material:
Probability with martinagles / Williams

Course/Module evaluation:
End of year written/oral examination 0 %
Presentation 0 %
Participation in Tutorials 0 %
Project work 100 %
Assignments 0 %
Reports 0 %
Research project 0 %
Quizzes 0 %
Other 0 %

Additional information:
none