האוניברסיטה העברית בירושלים
THE HEBREW UNIVERSITY OF JERUSALEM

The Hebrew University of Jerusalem

Syllabus

Random Schrodinger Operators - 80831

Last update 18-02-2020

HU Credits: 2

Degree/Cycle: 2nd degree (Master)

Responsible Department: Mathematics

Academic year: 0

Semester: 2nd Semester

Teaching Languages: English and Hebrew

Campus: E. Safra

Course/Module Coordinator: Prof Jonathan Breuer

Coordinator Email: jbreuer@math.huji.ac.il

Coordinator Office Hours: By appointment

Teaching Staff:

Prof Jonathan Breuer

Course/Module description:

The course will deal with the spectral theory of random Schroedinger operators. We will focus on proofs of localization, properties of the density of states, eigenvalue statistics, and the extended states conjecture for the Anderson model for high dimensions.

Course/Module aims:

The students will know the basic concepts and techniques in the study of random Schroedinger operators.

Learning outcomes - On successful completion of this module, students should be able to:

On successful completion of this module, students should be able to read a current paper in the area and even start a research project.

Attendance requirements(%):

none

Teaching arrangement and method of instruction: lectures

Course/Module Content:

-Introduction to ergodic and random Schroedinger operators
- The spectral measure and the density of states
- What is localization
- Eigenvalue statistics
- Absolutely continuous spectrum

Required Reading:

none

Additional Reading Material:

-Stollmann: "Caught by disorder"
- Kirsch: "An invitation to random Schroedinger operators" (paper)
- Carmona, Lacroix: "Spectral Theory of Random Schroedinger Operators"
- Aizenman, Warzel: "Random Operators: Disorder Effects on Quantum Spectra and

Dynamics"

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: