The Hebrew University of Jerusalem

Syllabus

MEASURE THEORY - 80517

Last update 07-01-2021

HU Credits: 4

Degree/Cycle: 1st degree (Bachelor)

Responsible Department: Mathematics

Academic year: 0

Semester: 1st Semester

Teaching Languages: Hebrew

Campus: E. Safra

Course/Module Coordinator: Prof Michael Hochman

Coordinator Email: michael.hochman _at_ mail.huji.ac.il

Coordinator Office Hours:

Teaching Staff:

Dr. Yoel Groman,
Mr. Nethanel Levi

Course/Module description:
Measurable sets and functions, measures, integrals, fundamental limit theorems for integrals, the Riesz representation theorem, regularity of measures, Lebesgue measure, Lusin's theorem, spaces of integrable functions and fundamental inequalities, complex measures, the Radon-Nikodym and Lebesgue decomposition theorems, measure differentiation, product spaces and the Fubini theorem

Course/Module aims:
See learning outcomes

Learning outcomes - On successful completion of this module, students should be able to:
Ability to prove and apply the theorems presented in the course.

Ability to apply correctly the mathematical methodology in the context of the course.

Acquiring the fundamentals as well as basic familiarity with the field which will assist in the understanding of advanced subjects.

Ability to understand and explain the subjects taught in the course.

Attendance requirements(%):
0

Teaching arrangement and method of instruction: Lecture + exercise

Course/Module Content:
Measurable sets and functions, measures, integrals, fundamental limit theorems for integrals, the Riesz representation theorem, regularity of measures, Lebesgue measure, Lusin's theorem, spaces of integrable functions and fundamental inequalities, complex measures, the Radon-Nikodym and Lebesgue decomposition theorems, measure differentiation, product spaces and the Fubini theorem
Other topics may be studied

Required Reading:
 none

 Additional Reading Material:
  W. Rudin, Real and Complex Analysis
G. Folland, Real Analysis

 Course/Module evaluation:
 End of year written/oral examination 85 %
 Presentation 0 %
 Participation in Tutorials 0 %
 Project work 0 %
 Assignments 15 %
 Reports 0 %
 Research project 0 %
 Quizzes 0 %
 Other 0 %

Additional information:
  Fall 2020: If the exam cannot be held on campus, the exam will be held by other
means. In this case an interview may be included as part of the examination.