



Syllabus

FUNDAMENTAL CONCEPTS IN REPRESENTATION THEORY - 80598

Last update 02-01-2024

HU Credits: 6

Responsible Department: Mathematics

Academic year: 0

Semester: 2nd Semester

Teaching Languages: English and Hebrew

Campus: E. Safra

Course/Module Coordinator: Prof. Yakov Varshavsky

Coordinator Email: yakov.varshavsky@mail.huji.ac.il

Coordinator Office Hours: By appointment.

Teaching Staff:

Prof Yakov Varshavsky,
Ms. Noam Zimhoni

Course/Module description:

Introduction to the representation theory of finite groups and, if time allows, of compact, and locally-compact groups.

Notice! Additional, or other, topics might be taught.

Course/Module aims:

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

Familiarity with the fundamental notions of algebra. Familiarity with modules, and semisimple rings. Familiarity with the basics of the theory of group representations.

Attendance requirements(%):

none

Teaching arrangement and method of instruction: Lecture + exercise

Course/Module Content:

- * Basics of representation theory of finite groups*
- * Modules over noncommutative rings*
- * Semisimple rings and modules*
- * Artin-Wedderburn theory*
- * Characters*
- * Induction, Frobenius reciprocity and Mackey theory*

If time allows:

- * Basics of representation theory of compact groups*

Other or additional topics may be studied

Required Reading:

none

Additional Reading Material:

Fulton, Harris, Representation Theory

Folland, A Course in Abstract Harmonic Analysis

Serre, Linear Representations of Finite Groups

Kowalski's lecture notes:

<https://people.math.ethz.ch/~kowalski/representation-theory.pdf>

Grading Scheme:

Written / Oral / Practical Exam 70 %

*Submission assignments during the semester: Exercises / Essays / Audits / Reports
/ Forum / Simulation / others 30 %*

Additional information:

none