



## *Syllabus*

# **FUNDAMENTAL CONCEPTS IN REPRESENTATION THEORY - 80598**

*Last update 17-08-2016*

HU Credits: 6

Responsible Department: mathematics

Academic year: 0

Semester: 2nd Semester

Teaching Languages: Hebrew

Campus: E. Safra

Course/Module Coordinator: Dr. Ori Parzanchevski

Coordinator Email: [parzan@math.huji.ac.il](mailto:parzan@math.huji.ac.il)

Coordinator Office Hours: By appointment.

Teaching Staff:

Dr. Ori Parzan

Mr. Oren Becker

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Course/Module description:

*Introduction to the representation theory of finite, compact, and locally-compact groups.*

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:

*Representations of finite groups - examples*

*Modules over non-commutative rings*

*Categories and functors*

*Semisimple rings and modules*

*Schur, Maschke and Artin-Wedderburn theory*

*Characters*

*Induction, Frobenius reciprocity and Mackey theory*

*Representations of compact groups - Haar, Peter-Weyl*

*Introduction to representations of locally compact groups*

Required Reading:

*none*

Additional Reading Material:

*Non-commutative Algebra - Farb & Dennis*

*Groups and Representations - Alperin & Bell*

*Representation Theory - Fulton & Harris*

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*Course/Module evaluation:*  
*End of year written/oral examination 80 %*  
*Presentation 0 %*  
*Participation in Tutorials 0 %*  
*Project work 0 %*  
*Assignments 20 %*  
*Reports 0 %*  
*Research project 0 %*  
*Quizzes 0 %*  
*Other 0 %*

*Additional information:*  
*none*