האוניברסיטה העברית בירושלים
THE HEBREW UNIVERSITY OF JERUSALEM

The Hebrew University of Jerusalem

Syllabus

Representation theory of the symmetric group - 80624

Last update 05-04-2020

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: Evgeny Strahov

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

Coordinator Office Hours:

Teaching Staff:

Prof Evgeny Strahov

Course/Module description:

The course will include the following principal topics:

1. General properties of representations of finite groups.

2. General properties of characters of finite groups.

3.Conjugacy classes in the symmetric group and combinatorics of Young diagrams.

4. Irreducible representations of the symmetric group over the complex field.

5. Characters of
irreducible representations of the symmetric group over the complex field

Course/Module aims:

1. To learn general properties of representations and characters of finite groups.

2. To learn classical combinatorics related to the symmetric group.

3. To learn explicit construction of irreducible representations of the symmetric group.

4. To learn derivation of formulas for the characters of irreducible representations of the symmetric group

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

At the end of the course students should know:

Representation of a finite group by linear transformations of a vector space.

Characters of representations of finite groups over the complex field.

Irreducible representations of the symmetric group over the complex field.

Formulas for the characters of irreducible representations of the symmetric group

Attendance requirements(%):

Teaching arrangement and method of instruction: Seminar

Course/Module Content:
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1. General properties of representations of finite groups.

2. General properties of characters of finite groups.

3.Conjugacy classes in the symmetric group and combinatorics of Young diagrams.

4. Irreducible representations of the symmetric group over the complex field.

5. Characters of
irreducible representations of the symmetric group over the complex field

Required Reading:
B. Sagan The Symmetric Group: Representations, Combinatorial Algorithms, and Symmetric Functions.

Additional Reading Material:

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: