האוניברסיטה העברית בירושלים
THE HEBREW UNIVERSITY OF JERUSALEM

The Hebrew University of Jerusalem

Syllabus

Framework rigidity - 80578

Last update 06-10-2020

HU Credits: *2*

Degree/Cycle: *2nd degree (Master)*

Responsible Department: *Mathematics*

Academic year: *0*

Semester: *1st Semester*

Teaching Languages: *Hebrew*

Campus: *E. Safra*

Course/Module Coordinator: *Prof Eran Nevo*

Coordinator Email: *nevo@math.huji.ac.il*

Coordinator Office Hours:

Teaching Staff:

Prof Eran Nevo,
Dr. Orit Raz

Course/Module description:

The seminar will deal with the notion of graph rigidity. Graph Rigidity is a classic notion in mechanics, regarding motions of solid bodies connected along flexible hinges. For example, the 4-cycle graph is rigid in R^1 and flexible in R^2.
Rigidity relates geometry with combinatorics and algebra.
We will define the notion of rigid graphs and present the characterizations of Laman and of Lovasz-Yemini for rigid graphs embedded in the plane. We will review recent works (Kiraly-Theran, Jordan-Tanigawa and others), dealing with the threshold for a giant rigid component to emerge in a random graph (usually under the Erdos-Renyi model).

Course/Module aims:

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

Students will be exposed to topics from the study of graph rigidity.

Students will learn how to present mathematical results in front of a peer group.

Attendance requirements(%):

90%

Teaching arrangement and method of instruction: Lecture

Course/Module Content:

The seminar will deal with the notion of graph rigidity. Graph Rigidity is a classic notion in mechanics, regarding motions of solid bodies connected along flexible hinges. For example, the 4-cycle graph is rigid in R^1 and flexible in R^2.
Rigidity relates geometry with combinatorics and algebra.
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Required Reading:
List of papers to be read will given at the beginning of the course. The reading material will be in English.

Additional Reading Material:

Course/Module evaluation:
End of year written/oral examination 0 %
Presentation 90 %
Participation in Tutorials 10 %
Project work 0 %
Assignments 0 %
Reports 0 %
Research project 0 %
Quizzes 0 %
Other 0 %

Additional information:
Prerequisites: linear algebra, rings, discrete math, topology.
[Other recommended courses: algebraic topology, convexity, commutative algebra, algebraic geometry.]