Syllabus

Large Cardinals - 80559

Last update 24-04-2024

<u>*HU Credits:*</u> *2*

<u>*Responsible Department:*</u> *Mathematics*

<u>*Academic year:*</u> *0*

<u>*Semester:*</u> *2nd Semester*

<u>*Teaching Languages:*</u> *Hebrew*

<u>*Campus:*</u> *E. Safra*

<u>*Course/Module Coordinator:*</u> *Yair Hayut*

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<u>*Coordinator Office Hours:*</u>

<u>*Teaching Staff:*</u>
Dr. Hayut Yair

<u>*Course/Module description:*</u>
The area of large cardinals deals with a certain hierarchy of axioms, extending

ZFC.

In this course we will focus on techniques for obtaining lower bounds for combinatorial assertions, namely - showing that if certain combinatorial properties hold at "small" cardinals (such as aleph1 or aleph_2) then in some inner model there are large cardinals.

We will start with the Kurepa Hypothesis and the tree property. Then, in order to obtain stronger results we will study Jensen's fine structure theory of L, and prove the existence of squares in L and the Covering Lemma.

If time permits, we will continue from there and talk about Dodd-Jensen Core Model (below a single measurable cardinal).

Course/Module aims:
  See learning outcome

Learning outcomes - On successful completion of this module, students should be able to:
  Exposure to the area of large cardinals in set theory.

Attendance requirements(%):
  0

Teaching arrangement and method of instruction:

Course/Module Content:
  Consistency strength.
Constructible Universe.
Fine Structure.
Projectum.
Squares in L.
The Covering Lemma for L.

Required Reading:
 None

 Additional Reading Material:
  A. Kanamori ⎕ The Higher Infinite

T. Jech ☐ Set Theory
R. Jensen - Manuscript on fine structure
Mitchell - The covering Lemma

Grading Scheme:
 Essay / Project / Final Assignment / Home Exam / Referat 50 %
  Submission assignments during the semester: Exercises / Essays / Audits / Reports / Forum / Simulation / others 50 %

Additional information: