

# The Hebrew University of Jerusalem

Syllabus

## Infinite Combinatorics - 80661

Last update 23-08-2022

<u>HU Credits:</u> 2

Degree/Cycle: 2nd degree (Master)

Responsible Department: Mathematics

<u>Academic year:</u> 0

<u>Semester:</u> 1st Semester

<u>Teaching Languages:</u> Hebrew

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

Course/Module Coordinator: Shimon Garti

Coordinator Email: shimon.garty@mail.huji.ac.il

Coordinator Office Hours: Sunday, 9:00-10:00

Teaching Staff:

#### Dr. Shimon Garty

#### Course/Module description:

The course deals with classical partition calculus, including the ordinary partition relation, omitting colors and the polarized partition relation. The starting point will be Ramsey theorem, and its generalizations. From there we will proceed to other areas in partition calculus.

#### Course/Module aims:

a. Basic introduction into the world of infinite combinatorics.

b. Exposure to the research level, with emphasis on open problems.

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

The students will be able to read advanced material in the area, and to try to cope with open problems.

### <u>Attendance requirements(%):</u>

None

Teaching arrangement and method of instruction: Frontal lecture.

#### Course/Module Content:

a. ordinary partition relation (Ramsey, Erdos-Dushnik-Miller, Shelah's theorem at singular cardinals, Hajnal's theorem).

b. Omitting colors (Todorcevic's theorem at successors of singulars).

*c.* Polarized relations (introduction, Shelah's theorem at limit of measurables, unbalanced polarized relations).

<u>Required Reading:</u> None.

<u>Additional Reading Material:</u> a. Neil Williams' book, Combinatorial set theory. b. The book of Erdos-Hajnal-Mate-Rado.

c. Relevant research papers.

<u>Course/Module evaluation:</u> 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 %

<u>Additional information:</u> Basic background in set theory will be helpful, though not formally required.