האוניברסיטה העברית בירושלים
THE HEBREW UNIVERSITY OF JERUSALEM

The Hebrew University of Jerusalem

Syllabus

Advanced topics in Geometry - 80671

Last update 28-10-2024

HU Credits: *4*

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

Responsible Department: *Mathematics*

Academic year: *0*

Semester: *1st Semester*

Teaching Languages: *English*

Campus: *E. Safra*

Course/Module Coordinator: *Dr. Yoel Groman*

Coordinator Email: *ygroman@gmail.com*

Coordinator Office Hours:

Teaching Staff:

Dr. Yoel Groman

Course/Module description:
Almost toric methods in algebraic and symplectic geometry

Course/Module aims:
Aquire the tools of toric, almost toric and tropical geometry, and exposure to advanced topics at their meeting point

Learning outcomes - On successful completion of this module, students should be able to:
1. Investigate the topology of manifolds described by polynomial equations.
2. Generate examples and phenomena in algebraic geometry

Attendance requirements(%):

Teaching arrangement and method of instruction:

Course/Module Content:
1. A quick review of basics of algebraic geometry
2. Lattices, fans and polytopes
3. Toric algebraic geometry
4. Toric symplectic geometry
5. Integral affine geometry
6. Almost toric fibrations
7. Advanced topics (depending on time and preferences): Tropical geometry, exotic Lagrangians and Markov triples, Newton Okounkov bodies, toric degeneration, mirror symmetry for log Calabi-Yau surfaces, cusp singularities and Looijenga's conjecture

Required Reading:
No required reading

Additional Reading Material:

Grading Scheme:

Submission assignments during the semester: Exercises / Essays / Audits / Reports / Forum / Simulation / others 100 %

Additional information:

Brief assignments will be handed out from time time. These will determine the grade.