



The Hebrew University of Jerusalem

Syllabus

Topics in Transcendental Number Theory - 80899

Last update 23-03-2025

HU Credits: 2

Degree/Cycle: 2nd degree (Master)

Responsible Department: Mathematics

Academic year: 2025

Semester: 2nd Semester

Teaching Languages: Hebrew

Campus: E. Safra

Course/Module Coordinator: Dan Mangoubi

Coordinator Email: dan.mangoubi@mail.huji.ac.il

Coordinator Office Hours:

Teaching Staff:

Prof. Dan Mangoubi

Course/Module description:

Classical proofs in transcendental number theory.

Lectures are given by students.

Possible topics include:

Hermite's proof on the transcendence of e ,

Lindemann's proof on the transcendence of π .

Padé approximations,

Hilbert 7th problem: $2^{\sqrt{2}}$ is transcendental,

Baker's theorem on linear forms in logarithms of algebraic numbers.

Diophantine approximations: Dirichlet's theorem, Liouville Theorem, Thue's theorem.

Continued fractions,

Siegel's theory on values of E-functions.

Course/Module aims:

Exposure to fascinating theorem of transcendental number theory, with methods bridging analysis and number theory.

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

Understanding ideas in transcendental Number Theory with a view towards Spectral Geometry.

Attendance requirements(%):

100

Teaching arrangement and method of instruction:

Course/Module Content:

See course description

Required Reading:

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Additional Reading Material:

Siegel - Transcendental Numbers

Lang-Introduction to transcendental numbers

Niven, Irrational numbers

Waldschmidt, introduction to Diophantine methods

Sound- Transcendental Number Theory

Grading Scheme:

Presentation / Poster Presentation / Lecture 100 %

Additional information: