האוניברסיטה העברית בירושלים
THE HEBREW UNIVERSITY OF JERUSALEM

The Hebrew University of Jerusalem

Syllabus

RIEMANN SURFACES - 80562

Last update 24-01-2019

HU Credits: 3

Degree/Cycle: 2nd degree (Master)

Responsible Department: Mathematics

Academic year: 0

Semester: 2nd Semester

Teaching Languages: Hebrew

Campus: E. Safra

Course/Module Coordinator: Dr. Shaul Zemel

Coordinator Email: zemels@math.huji.ac.il

Coordinator Office Hours: By appointment

Teaching Staff:

Dr. Shaul Zemel

Course/Module description:

In the course we shall study what are Riemann surfaces, and the basic theory of functions and differentials on them. We shall get acquainted with the classical results in the compact case, like the Riemann-Hurwitz Formula, Abel's Theorem, the Jacobi Inversion Theorem, and the Riemann-Roch Theorem. In addition, we shall present some results about the classification of Riemann surfaces, and we shall analyze their automorphism groups.

Course/Module aims:

The course aims to introduce the basic notions from the theory of Riemann surfaces, which today make the language which researchers in various mathematical domains use (e.g., Algebraic Geometry).

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

Find the genus of the Riemann surface associated with an algebraic curve
Determine the field of meromorphic functions on a branched covering of the sphere
Find a basis for the differentials that is adapted to a point on a concrete Riemann surface
Find relations of linear equivalence between divisors on Riemann surfaces
Evaluate the automorphism group of a given Riemann surface

Attendance requirements(%):

0

Teaching arrangement and method of instruction: Lectures

Course/Module Content:

Riemann surfaces, holomorphic maps, differentials, meromorphic functions, canonical homology bases, Riemann bilinear relations, Riemann-Roch Theorem, linear equivalence, Abel's Theorem, Jacobi Inversion Theorem, projective embeddings, simply connected Riemann surfaces, fundamental group, Kleinian groups, Fuchsian groups, automorphisms

Required Reading:

None

Additional Reading Material:

I shall follow some chapters of the book "Riemann Surfaces" by Farkas and Kra

Course/Module evaluation:

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 %

Additional information:

Edmund Safra Campus