



## 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](mailto:zemels@math.huji.ac.il)

Coordinator Office Hours: By appointment

Teaching Staff:

Dr. Shaul Zemel

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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:

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*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*