

MATH 501

Advanced Analysis

(2015 Fall Semester)

by
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Prerequisites: I strongly advise you to keep your undergraduate notes on Real Analysis, Complex Analysis and Topology nearby.

Credits: (3-0)3 / 7 ECTS

Outline(tentative): I plan this course to be a rather classical function theory course. I have in mind to study Riemann surfaces from an algebraic viewpoint. The meaning of this will be clear only when we are halfway through the course. Below is a rough outline:

- 1 week Review of function theory of single complex variable(homomorphic, meromorphic functions, Taylor and Laurent series, the Riemann sphere etc.)
- 2 weeks Möbius transformations
- 3 weeks Elliptic Functions and Elliptic Curves
- 5 weeks Riemann surfaces
- 3 weeks Fuchsian groups

Bibliographie:

- Bak, J. & Newman, D.J., *Complex Analysis*
- Ahlfors, L.V. *Complex Analysis*
- Lang, S., *Complex Analysis*
- Jones, G., Singerman, D., *Complex Functions*
- Weber, H., *Elliptische Functionen und Algebraische Zahlen*

Programme: Monday 09h00 - 12h00 @ Matematik Seminer Odası

Evaluation:

- 2 MT: % 60
- Final: % 40