

MATH-327

Topics in complex analysis

Ruf Matthias

Cursus	Sem.	Type
Mathematics	BA5	Opt.

Language of teaching	English
Credits	5
Session	Winter
Semester	Fall
Exam	Written
Workload	150h
Weeks	14
Hours	4 weekly
Lecture	2 weekly
Exercises	2 weekly
Number of positions	

Summary

The goal of this course is to treat selected topics in complex analysis. We will mostly focus on holomorphic functions in one variable. At the end we will also discuss holomorphic functions in several variables.

Content

- Sequences of holomorphic functions
- Functions with prescribed principal part
- Infinite products
- Holomorphic functions with prescribed zeros
- The Riemann mapping theorem
- Picard's great theorem
- The Riemann sphere
- An introduction to holomorphic functions in several variables

Keywords

Complex analysis, Mittag-Leffler theorem, Weierstrass product theorem, Riemann mapping theorem, Picard's great theorem, several complex variables

Learning Prerequisites**Required courses**

Analysis I-III (especially basic theory of holomorphic functions)

Important concepts to start the course

Basic theory of holomorphic functions in one complex variable

Learning Outcomes

By the end of the course, the student must be able to:

- Understand the concepts and methods taught in the course and during the exercise classes
- Apply those concepts and methods to analyze and solve problems in complex analysis

Teaching methods

Lectures (on blackboard) and exercise sessions with assistant

Expected student activities

Attending the lectures, solving the exercises

Assessment methods

Written exam

Dans le cas de l'art. 3 al. 5 du Règlement de section, l'enseignant décide de la forme de l'examen qu'il communique aux étudiants concernés.

Supervision

Office hours	No
Assistants	Yes
Forum	Yes

Resources

Bibliography

R. Remmert: Classical topics in complex function theory. Springer, New York, 1998

C. Laurent-Thiébaud: Holomorphic function theory in several variables: an introduction, Springer, London, 2011

Ressources en bibliothèque

- [Holomorphic function theory in several variables / Laurent-Thiébaud](#)
- [Classical topics in complex function theory / Remmert](#)

Notes/Handbook

There will be lecture notes available in moodle.

Moodle Link

- <https://go.epfl.ch/MATH-327>