

MATH-327

**Topics in complex analysis**

Braun Mathias

Cursus	Sem.	Type
Mathematics	BA5	Opt.

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

**Remark**

Cours donné en alternance tous les deux ans

**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 with beamer presentation of the script and blackboard (for proofs, sketches, images, and interactive discussions). 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	Yes
Assistants	Yes
Forum	Yes
Others	Office hours by appointment

### 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

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

#### Notes/Handbook

There will be lecture notes available in Moodle

#### Moodle Link

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