

**THE CHINESE UNIVERSITY OF HONG KONG**  
**Department of Mathematics**  
**MATH4060** (First term, 2018-19)  
**Complex Analysis**

This is a second course in complex analysis. Topics to be covered include the Poisson summation formula, Weierstrass infinite products,  $\Gamma$  and  $\zeta$  functions, the prime number theorem, the Riemann mapping theorem, elliptic functions, and time permitting the sum of two squares theorem. We assume as prerequisite a solid understanding of properties of analytic functions of one complex variable, at the level of Math 2230 or Math 3253. More precisely, Chapters 1-3 of our textbook (see below), with the exception of Section 5.5 of Chapter 2 and Section 7 of Chapter 3, will be assumed known as prerequisites.

### Instructor

- Yung Po-Lam (Office: LSB 234. Email: [plyung@math.cuhk.edu.hk](mailto:plyung@math.cuhk.edu.hk))

### Tutor and Grader

- Siu Chun Yin (Office: LSB 222A. Email: [cysiu@math.cuhk.edu.hk](mailto:cysiu@math.cuhk.edu.hk))

### Time and Venue

- Lectures: Tuesdays 5:30pm-6:15pm at AB1 G03, Thursdays 2:30pm-4:15pm, at LSB C2.
- Tutorials (*from* Week 2): Tuesdays 4:30pm-5:15pm, at AB1 G03.

### Expected Learning outcomes

Upon completion of the course, students are expected to be able to:

- state precisely and clearly the theorems covered in the course;
- understand and explain the proofs of the theorems covered in the course;
- apply the theorems covered to solve some related problems;
- determine the validity of various statements and arguments related to the course;
- appreciate the beauty of the subject.

### Assessment Scheme

- **Homework:** 10%

The assigned homework problems form an essential part of the course. They are intended to help understand the material in the course. No late homework will be accepted (unless there is a legitimate reason, with proof of evidence as appropriate). We will also drop the lowest homework score in the calculation of your grade.

- **Midterm:** 40%

The midterm will be held in class on October 23 (Tuesday), 4:30pm-6:15pm, at AB1 G03.

- **Final Examination:** 50 %

The final examination will be centralized by the University.

### Course webpage

Please check the following course webpage for course material, homework and announcements:

<http://www.math.cuhk.edu.hk/course/1819/math4060>

### Textbook

We will cover selected parts of the following book:

- E. M. Stein and R. Shakarchi, *Complex Analysis*, Princeton Lectures in Analysis, vol. 2, Princeton University Press, Princeton, NJ, 2003.