

THE CHINESE UNIVERSITY OF HONG KONG

Department of Mathematics MATH4060 (First term, 2015-16) Complex Analysis

This is a second course in complex analysis. Topics to be covered include the Poisson summation formula, Weierstrass infinite products, Γ and ζ 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)

Tutor and Grader

- Lee Man Chun (Office: LSB 222A. Email: mcleee@math.cuhk.edu.hk)

Time and Venue

- Lectures: Tuesdays 9:30am-10:15am, Thursdays 8:30am-10:15am, both at LSB LT4.
- Tutorials (*from* Week 2): Tuesdays 8:30am-9:15am, LSB LT4.

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.

* Because of constraints in manpower, the TA will only be able to grade about half of the assigned homework problems. Your homework grade will be determined by your performance on the problems that the TA grade. On the other hand, solutions to all assigned problems will be posted on the course webpage after the homework is due. So you will have a chance to look at the solutions to all homework problems, including those that are not graded.

- **Midterm:** 40%

The midterm will be held in class on October 20 (Tuesday), 8:30am-10:15am, at LSB LT4.

- **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/1516/math4060>

Textbook

We will cover selected parts of Chapters 4-10 of the following book:

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