Syllabus of Complex Analysis I

- Lecture time: Monday 14:00–16:00, Thursday 12:00–14:00

- Lecture venue: LT32 (Monday), LT34 (Thursday)

- Tutorial time: Monday 12:00–13:00, Wednesday 11:00–12:00, Friday 8:00–9:00

- Tutorial room: S17-0404 (Monday and Wednesday), S17-0405 (Thursday)

- Lecturer and tutor: Dr Wang Dong

- Office: Block S17, Room 06–20

- Tel: 6516 2746

- Email: `matwd@nus.edu.sg`

- Office hour: Wednesday 10:00–11:00, Friday 9:00–11:00

- Prerequsite: (MA1104 or MA2104 or MA1507) and (MA3110 or MA3110S)

- Course description:

  This module is a first course on the analysis of one complex variable. In this module, students will learn the basic theory and techniques of complex analysis as well as some of its applications.

  Target students are mathematics undergraduate students in the Faculty of Science.

  Major topics: complex numbers, analytic functions, Cauchy-Riemann equations, harmonic functions, elementary functions, contour integrals, Cauchy-Goursat Theorem, Cauchy integral formulas, Taylor series, Laurent series, residues and poles, applications to computation of improper integrals.

- References:

  – J. Brown and R. Churchill, *Complex Variables and it Applications*, 9th edition, McGraw Hill. (This is the main textbook, and we will cover most of Chapters 1-7. List of supplementary exercises will be taken from the book, and students are strongly advised to buy it.
    We will cover Chapters 1–7, but not all sections therein. We cover everything on the lecture notes that is based on this book.)

  – L. V. Ahlfors, *Complex Analysis*, 3rd edition, McGraw Hill.
    (This is a classic text by one of the leading experts. Beautifully written although it is generally considered difficult by undergraduates.)

  – E. B. Saff and A. D. Snider, *Fundamentals of complex analysis for Mathematics, Science and Engineering*, Prentice Hall.
    (Relatively easy to read, written mostly for an engineering audience.)

- Assessment: Assessment of students will be based on

  – One final examination (November), two hours long - 60% (closed book exam with one help sheet).

  – One mid-term test (date to be decided) - 20% (closed book test with one help sheet).

  – Four sets of (marked) homework - 10%.

  – Tutorial attendence - 5%.

  – In-class quizzes - 5%.

- LumiNUS course website:

  LumiNUS contains course materials (Lecture notes, Tutorial question sheets, Homework sheets), announcements, discussion forum, etc.

Course materials are downloadable in Files at the LumiNUS course website. You should visit LumiNUS regularly for updates.