MAT 305–201 APPLIED COMPLEX ANALYSIS: OUTLINE
2021-2022 Term 2

Instructor: Juncheng Wei, LSK 303B, Tel. 604-822-6510, E-mail: jcwei@math.ubc.ca

Time and Place: Mon-Wed-Fri: 12:00 noon to 1:00 pm in BUCH-B313

Important Information: This course will be online for a portion of the term. We will start in-person meetings on a date yet to be determined by the University. At the very earliest, this will be Jan 24th. This date may be updated as time goes on. When we resume in-person activities, we will meet in our scheduled classroom space on campus. For meetings prior to that time, we will meet on ZOOM which can be accessed through Canvas. Zoom id: 652 8657 9221

Textbook : Fundamentals of Complex Analysis for Mathematics, Science and Engineering,(Third Edition) by E. Saff, A. Snider.

Notes: Notes are important. We will follow the notes. Old notes are available at www.math.ubc.ca/∼ward and www.math.ubc.ca/∼jcwei

Topics and Teaching Scheme

- Fundamentals; complex exponentials, roots of unity, powers and roots, elementary mappings: (Sections 1.1-1.7)

- Functions of a Complex Variable: analytic functions, Cauchy-Riemann equations, Harmonic functions, some special functions such trigonometric functions (Sections 2.1-2.6,3.1-3.2)

- Multi-valued functions, inverse functions, and branch cuts. The Logarithm function. (Sections 3.3, 3.5, and course notes).

- Contour integration. Cauchys integral theorem, path independence, (Sections 4.1–4.7)

- Laurent series, singularities, poles and residue Calculus (Sections 5.5–5.7,6.1-6.5)

- Fourier transform integrals (Section 8.18.2 and class notes)

- Laplace transform integrals, integrals of multi-valued functions, Nyquist criteria and applications. Fourier transform integrals (section 8.3 and class notes)

Grading: The weighting will be: Final 50/100, 2 Midterms 20/100 each, HW 10/100. The first midterm is Feb. 11th, and the second midterm is March 25th. There are no make-up midterms. If you miss a midterm for a valid medical reason, the weighting for the final will be adjusted. Other than this, no re-negotiating of the weights of the different components of the overall grade will be considered.

Assignments: There will be weekly assignments. No late homeworks will be accepted for any reason. I will drop the lowest HW score.

Office Hours:
    Online office hours: Monday, Wednesday, Friday, 4-5pm; After March 4, MWF, 8:30-10pm
    Zoom id for office hours:672 9817 4716

Final Remark: Lecture notes, assignments, solutions to assignments and examinations will be posted on my web or Canvas when they are ready.

    Any questions? Please send me an email or drop by my office LSK 303B.