

## MATH 300: Introduction to Complex Variables

**Instructor:** Mathav Murugan (email: mathav@math.ubc.ca)

**Lectures:** Mon 13:00-14:00 Tue Wed Thu 13:00-15:00 on Zoom.

**Dates:** Jul 06, 2020 to Aug 13, 2020

**Office hours:** Mon 14:00-15:00, Wed 16:00-17:00 or by appointment.

**Zoom link for lectures and office hours:** <https://zoom.us/j/94004017079> (A password is required. This password will be made available on the canvas webpage)

**Course webpage:** We will use Canvas <https://canvas.ubc.ca/courses/49420>

**Text:** The course text is E.B. Saff, A.D. Snider, “Fundamentals of Complex Analysis with Applications to Engineering, Science and Mathematics”, third edition.

**Outline.** Summer courses are very fast paced as we cover thirteen weeks worth of material in six weeks. So expect to work very hard. Even if you miss a day of lecture, you risk falling behind for rest of the course. Topics include

1. Complex numbers (sections 1.1 - 1.6 in the text)
2. Complex derivatives and analytic functions (sections 2.1 - 2.5 in the text)
3. Elementary functions (sections 3.1 - 3.3, 3.5 in the text)
4. Contour integration (sections 4.1 - 4.3 in the text)
5. Cauchy’s theorem (section 4.4 in the text)
6. Cauchy’s Integral Formula and its applications (section 4.5-4.6 in the text)
7. Taylor series ( 5.1 - 5.3 in the text)
8. Laurent series, singularities and residues. (sections 5.5, 5.6, 6.1-6.3 in the text)

I will post lecture notes on Canvas after each lecture.

**Homework:** Homework will be given regularly (not to be submitted)

**Quizzes:** A weekly quiz will be held every Thursday in class from 14:00 to 14:50 starting from the second week of class. Quiz will be held on the following dates:

| Quiz dates |
|------------|
| July 16    |
| July 23    |
| July 30    |
| August 6   |
| August 13  |

**The weekly quizzes and final will be invigilated via Zoom and it is absolutely necessary for every student to have a webcam.** If a student does not have a webcam in their computer, they will not be able to complete the course. Missing a quiz normally results in a mark of zero. There will be no make up quizzes. Please note that the lowest quiz score will be dropped.

**Final exam:** There will be a final held on zoom during the August examination period (sometime between Mon, Aug 17 to Fri, Aug 21).

**Evaluation:** The final mark will be calculated as follows:

Quizzes: 80% (lowest quiz score will be dropped)

Final exam: 20%

**Prerequisites:** You must have taken one of MATH 200, MATH 217, MATH 226, MATH 253, MATH 254, and you must either have taken or currently be taking one of MATH 217, MATH 227, MATH 254, MATH 317.

**Academic integrity:** By enrolling as a student at UBC, you have agreed to abide by the University Rules on Academic Honesty. Here is what you have agreed to and are bound by: “Academic honesty is essential to the continued functioning of the University of British Columbia as an institution of higher learning and research. All UBC students are expected to behave as honest and responsible members of an academic community. Breach of those expectations or failure to follow the appropriate policies, principles, rules, and guidelines of the University with respect to academic honesty may result in disciplinary action. It is the student’s obligation to inform himself or herself of the applicable standards for academic honesty. Students must be aware that standards at the University of British Columbia may be different from those in secondary schools or at other institutions. If a student is in any doubt as to the standard of academic honesty in a particular course or assignment, then the student must consult with the instructor as soon as possible, and in no case should a student submit an assignment if the student is not clear on the relevant standard of academic honesty. If an allegation is made against a student, the Registrar may place the student on academic hold until the President has made his or her final decision. When a student is placed on academic hold, the student is blocked from all activity in the Student Service Centre.”

**University policies:** UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence. UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom. UBC provides appropriate accommodation for students with disabilities and for religious observances. UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions. Details of the policies and how to access support are available on the UBC Senate website <https://senate.ubc.ca/policies-resources-support-student-success>.

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