

## MAT342 Applied Complex Analysis

Spring 2023

**Course Description** This is a mathematically rigorous course, and most statements will come with complete proofs. The topics cover complex numbers, analytic functions, the Cauchy-Riemann and Laplace equations, the Cauchy integral formula and applications, the fundamental theorem of algebra and the maximum principle, the Cauchy residue theorem and applications to evaluating real integrals, conformal mappings.

### Textbook

*Complex Variables and Applications* (9th edition) by Brown and Churchill.

### Instructor

Dr. Hongming Nie (hongming.nie@stonybrook.com) <https://sites.google.com/view/hmnie/home>

### Grader

Willie Rush Lim (Lim.Willie@stonybrook.edu)

### Lectures time

Lectures are on Monday, Wednesday, Friday 11:45am-12:40pm in the Earth&Space 131.

### Course schedule

This is tentative and can be adjusted as the semester progresses.

| Week | Dates               | Sections covered             |
|------|---------------------|------------------------------|
| 1    | 01/23, 01/25, 01/27 | sections 1.1-1.11            |
| 2    | 01/20, 02/01, 02/03 | sections 1.12-2.18           |
| 3    | 02/06, 02/08, 02/10 | sections 2.19-2.26           |
| 4    | 02/13, 02/15, 02/17 | sections 2.26-3.34           |
| 5    | 02/20, 02/22, 02/24 | sections 3.35-4.45           |
| 6    | 02/27, 03/01, 03/03 | sections 4.46-4.49           |
| 7    | 03/06, 03/08, 03/10 | sections 4.50-4.57           |
| 8    | 03/13, 03/15, 03/17 | Spring Break                 |
| 9    | 03/20, 03/22, 03/24 | sections 4.58-4.65           |
| 10   | 03/27, 03/29, 03/31 | sections 5.66-5.73           |
| 11   | 04/03, 04/05, 04/07 | sections 6.74-6.81           |
| 12   | 04/10, 04/12, 04/14 | sections 6.82-7.86           |
| 13   | 04/17, 04/19, 04/21 | sections 7.87-7.93           |
| 14   | 04/24, 04/26, 04/28 | sections 7.94-8.100          |
| 15   | 05/01, 05/03, 05/05 | sections 8.107-8.110, review |

### Office hours

Monday 1pm-2pm, Thursday 10am-11am, by appointment at Math building 4115.

### Homework

There will be weekly homework that should be submitted by next Friday.

### Exams

1st (in-class) midterm exam: 03/03

2nd (take-home) midterm exam: 04/07-04/14

Final exam: Friday 5/12, 11:15am-1:45pm

### Grading

Weekly homework assignments, due Friday in class, 20% of the final grade.

- One in-class midterm exam, 20% of the total grade.
- One take-home midterm exam, 20% of the total grade.
- One final exam, 40% of the total grade.

The final course grade will be determined by a weighted average of the above graded components.

### **Late Homework**

A homework assignment shall be considered late if it is not turned in by the end of lecture on the due date. Late homework assignments may be turned in by the end of the first lecture after the due date, but will be penalized 50%. Late homework assignments will not be accepted more than one lecture past the due date.

### **Disability Support Services (DSS) Statement**

If you have a physical, psychological, medical, or learning disability that may impact your course work, please contact Student Accessibility Support Center, ECC (Educational Communications Center) Building, Room 128, (631)632-6748. They will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential.

Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and Disability Support Services. For procedures and information go to the website at <http://www.stonybrook.edu/ehs/fire/disabilities>.

**Academic Integrity Statement** Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another persons work as your own is always wrong. Faculty are required to report any suspected instance of academic dishonesty to the Academic Judiciary. For more comprehensive information on academic integrity, including categories of academic dishonesty, please refer to the academic judiciary website at <http://www.stonybrook.edu/uaa/academicjudiciary/>

### **Critical Incident Management**

Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of Judicial Affairs any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, and/or inhibits students ability to learn. Further information about most academic matters can be found in the Undergraduate Bulletin, the Undergraduate Class Schedule, and the Faculty-Employee Handbook.

### **Syllabus revision**

Over the course of the semester, events may occur that require changes to the policies stated in this document, and especially the weekly plan of lectures. Such changes will be announced in class, and a revision to this syllabus will be posted.