

# MATH-381-01

## Complex Variables

Syllabus and Course Information – Spring 2022

2022 January 10

### Course Information

#### Course Description from RIT:

This course covers the algebra of complex numbers, analytic functions, Cauchy-Riemann equations, complex integration, Cauchy's integral theorem and integral formulas, Taylor and Laurent series, residues, and the calculation of real-valued integrals by complex-variable methods.

#### Lectures:

MWF 12pm-12:50pm, on Zoom and/or in CAR(76)-1155, beginning 2022 January 10 and ending 2022 April 25.

#### Holidays (no lecture):

Jan. 17 (Martin Luther King Day); Mar. 7, 9 & 11 (Spring Break).

#### Instructor:

Dr. John T. Whelan; LAC(74)-2063, 475-5083;  
jtwsma@rit.edu or john.whelan@astro.rit.edu

**Office Hours:** via Zoom <https://rit.zoom.us/j/93305450336> MR 3pm-4:30pm or by appointment.

(Please email to make an appointment.)

#### Course Website:

<http://ccrg.rit.edu/~whelan/MATH-381/>  
Most material posted at <http://mycourses.rit.edu/>

#### Required Textbook and Homework System:

- Zill, D. G. and Shanahan, P. D., *Complex Analysis: A First Course with Applications*, 3rd edition (Jones and Bartlett, 2013)
- WebAssign, <http://www.webassign.net/>

You should register for WebAssign using the “START HERE” link under the “WebAssign and ebook Access” section of the Content Browser on MyCourses (instructions reproduced below). There is a two-week free trial at the start of the semester, after which you have to pay. The WebAssign access comes with an eBook of Zill and Shanahan.

**Registration Info from WebAssign:**

<https://startstrong.cengage.com/webassign-brightspace-ia-no/>

This link provides you with the instructions to register for WebAssign. Please read through these instructions before beginning the registration process. Refer to these instructions and technical support information if you have any questions or issues with WebAssign at any point of the semester. Please be sure you follow these steps and technical support link before reaching out to your professor with questions on registration and WebAssign support.

**Prerequisites:**

Multivariable Calculus (MATH-219) or Multivariable and Vector Calculus (MATH-221)

**Scope of Course:**

The course will cover most of Zill and Shanahan, corresponding to the following topics.

- 1 Functions of a Complex Variable
- 2 Integration in the Complex Plane
- 3 Series and Residues
- 4 Conformal Mappings

A tentative timetable for the pace of the course (**subject to change**) is in MyCourses

**Homework and Problem Sets:**

Students are expected to read the relevant sections of the text *before* each class, and solve at least a list of designated sample problems. (Solving additional problems from the textbook is highly recommended; answers to odd-numbered exercises appear in the back of the book.)

Additionally, about once per week, there will be a short problem set due, to be submitted electronically through WebAssign.

**Class Exercises and Quizzes:**

There will be occasional exercises and brief quizzes to be submitted via MyCourses; participation in these activities forms one component of the course grade.

**Exams:**

Two preliminary exams, format TBA, currently planned for the week of February 14 and the week of March 28.

Final exam (cumulative) scheduled for Friday, April 29, 10:45am-1:15pm, CAR(76)-1155.

**Discussion Board:**

There is a discussion board in mycourses, on which you are encouraged to ask about and discuss both conceptual and practical aspects of the week's materials with me and your peers.

**Slack Workspace:**

If you prefer to use Slack to discuss the course with me and your peers, we have a workspace at <https://RIT-MATH-381-whelan.slack.com/>

# Course Policies

## **COVID Considerations:**

In the interest of students unable to come to campus due to quarantine, or unwilling to risk their health by attending class in person, I plan to stream class meetings over Zoom (see link on the navbar and in the calendar in MyCourses) for at least the first four weeks of the semester. Office hours will be on zoom for the time being. There is no in-person attendance requirement for regular classes, and homework will be submitted online. The format for exams (which may or may not be in class) is still to be determined.

For any in-person sessions, compliance with RIT's COVID protocols, notably wearing a mask that covers your mouth and nose, is required. Students are also encouraged to protect themselves with a full set of vaccinations (required of all staff, faculty and students), and by wearing a high-quality mask such as N95/FFP3 or KN95/KF94/FFP2.

## **Course Participation:**

While there is no in-person attendance requirement, active participation in the class is expected via class sessions and/or online discussions, as well as homework and exercises.

## **Exam Attendance:**

Students are ordinarily expected to take exams as scheduled (with appropriate modifications for official arrangements via the disability services office; see later in the syllabus). If you have any conflict, illness, etc, which makes it impossible for you take (or safely take) the exam, please communicate this to me as soon as possible so we can consider other arrangements. Obviously, given the current public health situation, you should not feel compelled to come take an exam if you're sick.

## **Collaboration:**

There is no rule against collective brainstorming on the homework assignments, but note that their primary purpose of giving you practice with the material is best served if you actually do your own work. Also, note that most of the problems will have elements randomized by WebAssign, so different students will not in general have identical problems.

Working together on exams, or copying off of someone else's test, is of course cheating and will not be tolerated.

## **Special Arrangements for Students with Disabilities:**

Students with disabilities who wish to receive accommodations in this class should contact the Academic Accommodations Office at 475-2023 or via their website <http://www.rit.edu/studentaffairs/disabilityservices/academicaccommodations.php> as soon as possible so that warranted accommodations can be implemented in a timely fashion. The Academic Accommodations Office is located in SAU(04)-1150.

**Grades:**

Grades will be based on the following components:

- 5% Class Exercises and Quizzes
- 10% Problem Sets
- 25% First Prelim Exam
- 25% Second Prelim Exam
- 35% Final Exam

Your score on each component of the course (each prelim, the final, all the homeworks together, and all the in-class activities together) will be converted to a numerical “grade point” score, and the weighted average of those five scores will be your final grade, converted to a letter grade according to the scale below.

**Grading Scale:**

A	3.83–4.5	C+	2.17–2.5
A-	3.5–3.83	C	1.83–2.17
B+	3.17–3.5	C-	1.5–1.83
B	2.83–3.17	D	0.5–1.5
B-	2.5–2.83	F	(–0.5)–0.5

**Self Care**

The academic demands of this and your other courses can be understandably difficult, and add to stresses you may feel in the context of the world at large in this difficult time. I want you to succeed in this course and learn as much as possible, but always remember your well-being is important. Additionally, if you find yourself having trouble in the course, please reach out to me sooner rather than later.