

- CLASS:** M Tu W F: 11:10 am – 12:00 noon, Zoom; CRN: 30068
- INSTRUCTOR:** Karel Stroethoff
Office: MA 307; e-mail: karel.stroethoff@umontana.edu
- PREREQUISITE:** M 273 and M 307 (or equivalent)
- MOODLE PAGE:** <https://moodle.umn.edu/course/view.php?id=39157>
Homework assignments and other information pertinent to this course will be posted at this webpage.
- TEXT:** Lecture notes will be provided. We will loosely follow the following recommended book (which will be on the moodle page):
- William T. Shaw, Complex Analysis with *Mathematica*,
Cambridge University Press, 2006. ISBN 978-0-521-83626-5.
- IMPORTANT DATES:**
- | | |
|--------------|---------------------------------|
| January 18: | Martin Luther King Day; Holiday |
| February 15: | Presidents' Day; Holiday |
| March 16: | Student Break Day; No Class |
| April 2: | Student Break Day; No Class |
| April 26–30: | Final Exam Week |

COURSE DESCRIPTION: Analytic functions, complex integration, singularities and application to contour integration, harmonic functions, spaces of analytic functions.

COURSE OBJECTIVES & LEARNING GOALS:

Purpose of the Course: To provide an in-depth introduction to complex analysis techniques and some exposure to rigorous mathematical proofs. To discuss some of the geometrical and topological aspects of complex analysis. The emphasis is on those parts of the subject that emanate from Cauchy's integral formula and Cauchy's residue theorem.

Learning Goals: Learning Goals include, but are not limited to:

- A. Course overarching learning goal: to learn to think independently and write clearly.
- B. Course specific learning goals:
 1. to learn the basics of complex analysis (definitions, terminology, concepts, techniques, methods)
 2. to learn different ways in which analyticity can be defined.
 3. to understand Cauchy's theorem and integral formula and some of their applications
 4. to use complex analytic methods to evaluate real integrals.
 5. to be able to write a clear proof involving above items.

HOMEWORK: There will be regular homework and reading assignments, and part of the assigned homework will be collected for grading. To help you keep track of the assigned homework I will post a list of all assigned problems (with the dates they are due) on the moodle page for this course.

STUDY PROJECT. You will be given a study project to work on in small groups. For this project you will read a journal article or chapter of a book in a certain subject, give a presentation on your subject to the rest of the class during the Final Exam period scheduled for this course (Wednesday, April 28, 10:10am–12:10pm), and submit a report on your study project by the end of that day. Further guidelines will be provided at the start of the projects, probably five to six weeks before the end of the semester.

GRADING: Your grade for the course will be based for 2/3 on several written homework assignments given throughout the semester and for 1/3 on your study project.