Spring 2-1-2022

M 472.01: Introduction to Complex Analysis

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CLASS: M Tu W F: 11:10 am – 12:00 noon; CRN: 30046

INSTRUCTOR: Karel Stroethoff
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PREREQUISITE: M 273 and M 307 (or equivalent)

MOODLE PAGE: `https://moodle.umt.edu/course/view.php?id=51162`
                     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 17:   Martin Luther King Day; Holiday
                     January 18:   First day of instruction
                     February 21:   Presidents' Day; Holiday
                     March 21–25:   Spring Break
                     May 9–13:   Final Exam Week

FINAL EXAM: Friday, May 13, 10:10 am – 12:10 pm.

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.

MIDTERM: Tuesday, March 29.

GRADING: Your grade for the course will be based on the three assessment components using the following percentages: 50% homework, 20% midterm, and 30% final exam.