Independent Study Math 4299, Section 001
Fall 2025

Instructor: Dr. William Blair
Office: RBN 4008
Email: wblair@uttyler.edu

Course Schedule: Student and instructor meet weekly.

Course Website: You MUST activate your Canvas account. To do so, go to `https://uttyler.edu/canvas`. This is also the address to login. If you are registered in the course, you already have access to the course. All important documents will be posted on Canvas.

Office hours: 4:00 PM - 5:00 PM MoWeFr in RBN 4008 (or by appointment)

Required Text: *Bicomplex Holomorphic Functions: The Algebra, Geometry and Analysis of Bicomplex Numbers* by by Luna-Elizarrarás, Shapiro, Struppa, and Vajiac

Course Description: Study of functions of a bicomplex variable. Emphasis is given to analytic functions, differentiation, integration and relating these concepts to their complex variable counterparts.

Course Outline: Selected topics in Chapters 1-8 and 11 of the text

Student Learning Outcomes: Upon completion of this course, students should be able to do the following:

- Compare and contrast properties and characteristics of functions of a bicomplex variable with those of functions of a complex variable
- Understand the algebra and geometry of bicomplex numbers
- Grasp the ideas of continuity, analyticity, and representation of functions of a bicomplex variable
- Understand the theory of analytic functions of a bicomplex variable
- Master computational aspects of the bicomplex numbers

Grading: Grade will be based on three aspects: participation, paper, and presentation. The scale for letter grades will be the standard A:90-100%, B: 80-89%, C: 70-79%, D: 60-69%, F:<60%.
The breakdown of your final course grade into categories is given below.

Participation: 40%
Paper: 30%
Presentation: 30%

Attendance: Student will meet with instructor regularly for discussion.

Paper: Student will write an expository paper detailing their findings and conclusions by the end of the semester.

Presentation: Student will present their findings and conclusions to the public during the regularly scheduled Colloquium of the Department of Mathematics.

University Policies: September 8 is this semester's Census Date, the deadline for all registrations, schedule changes, and section changes. November 3 is the last day to withdraw from one or more courses. For university policies concerning Students' Rights and Responsibilities, Grade Replacement/Forgiveness, State-Mandated Course Drop Policy, Disability Services, Student Absence due to Religious Observance, Student Absence for University-Sponsored Events and Activities, Social Security and FERPA Statement, please see the University Policies and Information file on this course's Canvas page.

Course Policy Regarding AI:
UT Tyler is committed to exploring and using artificial intelligence (AI) tools as appropriate for the discipline and task undertaken. We encourage discussing AI tools' ethical, societal, philosophical, and disciplinary implications. All uses of AI should be acknowledged as this aligns with our commitment to honor and integrity, as noted in UT Tyler's Honor Code. Faculty and students must not use protected information, data, or copyrighted materials when using any AI tool. Additionally, users should be aware that AI tools rely on predictive models to generate content that may appear correct but is sometimes shown to be incomplete, inaccurate, taken without attribution from other sources, and/or biased. Consequently, an AI tool should not be considered a substitute for traditional approaches to research. You are ultimately responsible for the quality and content of the information you submit. Misusing AI tools that violate the guidelines specified or this course (see below) is considered a breach of academic integrity. The student will be subject to disciplinary actions as outlined in UT Tyler's Academic Integrity Policy.

For this course, AI is **not permitted** in this course at all.

Notice: All policies and information above provide general guidelines for the course and may be amended throughout the course as needed at the discretion of the instructor. Any changes will be directly communicated to students through email, announcement in Canvas, or verbally in the classroom.