Introduction to Complex Variables Mathematics 4342, Section 001
Fall 2025

Instructor: Dr. William Blair
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Course Schedule: Class meets in Arts and Sciences 158 MoWeFr 2:30PM - 3:25PM

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: *Fundamentals of Complex Analysis with Applications to Engineering and Science* by Saff and Snider, Third Edition (ISBN-13: 978-0139078743)

Course Description: Study of functions of a complex variable. Emphasis is given to analytic functions, differentiation, integration, and series expansions.

Course Prerequisites: A grade of C or better in MATH 3425 and MATH 3404.

Course Outline: Chapters 1-6 of the text and other chapters, in part or in full, as time permits

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

- Extend your skills in elementary calculus to the complex plane and define elementary functions to the complex plane
- Understand the algebra and geometry of complex numbers and the complex plane.
- Grasp the ideas of continuity, analyticity and the multi-valued nature of (some) functions of a complex variable. Give examples of analytic functions, harmonic functions and contours.
- Understand the theory of analytic functions, including all major theorems.
- Master formal proofs of fundamental complex analysis results.
- Evaluate integrals and series using complex methods that could not be evaluated with Calculus.
- Apply the theory of analytic functions to problems in science and engineering.

Approximate Course Schedule:

Quiz 1	Friday, August 29
Quiz 2	Friday, September 5
Exam 1	Friday, September 12
Quiz 3	Friday, September 19
Quiz 4	Friday, September 26
Exam 2	Friday, October 3
Quiz 5	Friday, October 10
Quiz 6	Friday, October 17
Exam 3	Friday, October 24
Quiz 7	Friday, October 31
Quiz 8	Friday, November 7
Exam 4	Friday, November 14
Quiz 9	Friday, November 21
Final Exam	Wednesday, December 10 (2:45 PM - 4:45 PM)

Grading: Scores will be posted on Canvas. After the end of the semester, final course grades will be available on `my.uttyler.edu`. A final course grade of 90% is guaranteed to be at least an A, a final course grade of 80% is guaranteed to be at least a B, a final course grade of 70% is guaranteed to be at least a C, and a final course grade of 60% is guaranteed to be at least a D. All grades below D will be F. The breakdown of your final course grade into categories is given below.

Homework/Quizzes: 40%
Midterm exams: 40% each (there will be four)
Final exam: 20%

If you have any questions about the grading of a particular quiz or exam, you must contact me no more than one week after the day I return the graded assignment in class, whether you are present during that class or not.

Attendance: It is your responsibility to attend class. Attendance is mandatory. This means, among other things, coming to class on time and prepared. Before class begins, you should turn off cell phones and any other electronic devices. Students are responsible for all announcements made during lecture.

Homework: One homework assignment will be assigned every Friday and will be due the following Friday. To account for a hectic semester, the lowest homework grade will be dropped. You may submit homework handwritten (so long as it is legible) or typeset using LATEX (preferred).

Quizzes: There will be a quiz given each week that there is not an exam. Quizzes will usually be given at the end of the class period. The quizzes will give you the opportunity to identify weaknesses before the next exam. Generally, the quiz will cover vocabulary and elementary computations from the previous week, but as the semester progresses, these may become more involved, e.g., asking for statements of

named theorems or short proofs. For the purposes of your overall grade, each quiz will be treated as a homework assignment. To account for a hectic semester, the lowest quiz grade will be dropped.

Exams: There will be 4 midterm exams and 1 final exam.

Final Assessment:. The final exam will be cumulative. The final exam is Wednesday December 10, 2025 2:45 PM - 4:45 PM.

Cell Phones: Cell phones are not permitted in class. You must silence them and put them away before class begins.

Calculators: Calculators will not be allowed on quizzes nor on exams. You will need to be proficient in fractions and basic computations. Many homework problems will need to be done without calculators. Study accordingly.

Absences: Make-ups for **documented** absences that are **required** as part of a UT Tyler obligation (e.g. athletes participating in an event, students participating in a debate contest, etc.) or for religious observation will be granted. For all make-ups of this type, prior notification of at least one week and documentation are required. Other make-ups are granted only in extreme cases and at the sole discretion of the instructor. Prior notification is still required. **Under no circumstances will make-ups be granted without prior notification.** Leaving early for a break is NOT grounds for a make-up, so please make your travel plans accordingly. In almost all cases, missed work will be assigned a 0.

Academic Integrity: Your work must be your own. Violations will be processed according to the established guidelines of the department, college, and university. Violations of academic integrity include, but are not limited to, cheating, fabrication, or plagiarizing. A range of academic sanctions may be taken against a student who engages in academic dishonesty. Below are ideas related to academic integrity.

Resources you are encouraged to utilize in this course include the textbook and unassigned problems, notes from class, assigned homework problems, your fellow Math 4342 students, the Math Learning Center, and your instructor. E-mail is the best way to contact me. I reply to email from 9:00 A.M.–4:00 P.M. Monday–Friday.

A note about a resource NOT allowed in this course: while the internet may be a valuable resource, using it to unethically acquire answers for your work will be considered a violation of academic integrity and processed accordingly. Similarly, copying answers from other students' assignments, past or present, violates the idea that your work must be your own.

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.