

Fall 2021

## Math 4322 – Introduction to Complex Variables

Section 001 (81343) (Tue, Thu 3:30-4:50 PM, Room PKH 107)

**INSTRUCTOR:** Dr. Gaik Ambartsoumian      **PHONE:** (817) 272-3384  
**WEB ADDRESS:** <https://gambarts.utasites.cloud/math4322.html>      **E-MAIL:** gambarts@uta.edu  
**OFFICE HOURS:** Tue, Thu 2:00 -3:00PM or by appointment      **OFFICE:** 443 Pickard Hall

**FACULTY PROFILE:** <https://www.uta.edu/profiles/gaik-ambartsoumian#teaching>

**TEXTBOOK:** *Complex Variables and Applications*, 9-th Edition, by J.W. Brown and R.V. Churchill,

**COURSE CONTENT:** An introduction to the theory of functions of a complex variable and to its applications, including uses of the residue theory, contour integration and conformal mappings.

**PREREQUISITES:** C or better in MATH 2326 (Calculus III).

**IMPORTANT:** You should have an activated MavMail account and check it regularly during the semester. You are responsible for all the information I will be sending out to your MavMail accounts and the announcements I make through Canvas).

**QUIZZES:** There will be one quiz given at the end of the lecture in class every week except for the first week of classes and exam weeks. At the end of the semester the two lowest quiz grades will be dropped. Quizzes will NOT be announced in advance and **NO make up quiz will be given for the missed one**, unless a valid proof of a University authorized absence is presented.

**HOMEWORKS:** The instructor will distribute a list of suggested homework problems from your textbook, as well as assign some other problems (not from the textbook) at his own discretion throughout the semester. The homework problems are suggested, i.e. **they should not to be turned in for a grade**. However, you are strongly encouraged to work on these problems, since similar ones are going to appear on your quizzes and exams.

### GRADING POLICY:

Quizzes	20 %	A = 90-100
Midterm Exam	30 %	B = 80-89
Final Exam	50 %	C = 70-79
Total Points	100 %	D = 60-69

Exam Schedule	
Midterm Exam (tentative date)	Final Exam
October 14, 2021	December 14, Tuesday 2:00-4:30 PM

**ATTENDANCE POLICY:** At the University of Texas at Arlington, taking attendance is not required but attendance is a critical indicator in student success. Each faculty member is free to develop his or her own methods of evaluating students' academic performance, which includes establishing course-specific policies on attendance. As the instructor of this section, I strongly recommended that you attend every class. **A missed exam cannot be made up.**

However, while UT Arlington does not require instructors to take attendance in their courses, the U.S. Department of Education requires that the University have a mechanism in place to mark when Federal Student Aid recipients “begin attendance in a course.” UT Arlington instructors will report when students begin attendance in a course as part of the final grading process. Specifically, when assigning a student a grade of F, faculty report the last date a student attended their class based on evidence such as a test, participation in a class project or presentation, or an engagement online via Blackboard. This date is reported to the Department of Education for federal financial aid recipients.

**ELECTRONIC COMMUNICATION:** UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines, events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at <http://www.uta.edu/oit/cs/email/mavmail.php>.

**STUDENT SUPPORT SERVICES:** UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include [tutoring](#) by appointment, [drop-in tutoring](#), [mentoring](#) (time management, study skills, etc.), [major-based learning centers](#), [counseling](#), and [federally funded programs](#). For individualized referrals, students may call the Maverick Resource Hotline at 817-272-6107, send a message to [resources@uta.edu](mailto:resources@uta.edu), or view the information at [Resource Hotline](#) (<http://www.uta.edu/studentsuccess/success-programs/programs/resource-hotline.php>).

**ACADEMIC INTEGRITY:** Students enrolled in all UT Arlington courses are expected to adhere to the UT Arlington Honor Code:

*I pledge, on my honor, to uphold UT Arlington’s tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence.*

*I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.*

UT Arlington faculty members may employ the Honor Code in their courses by having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. Per UT System Regents’ Rule 50101, §2.2, suspected violations of university’s standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student’s suspension or expulsion from the University. Additional information is available at <https://www.uta.edu/conduct/>. Faculty are encouraged to discuss plagiarism and share the following library tutorials <http://libguides.uta.edu/copyright/plagiarism> and <http://library.uta.edu/plagiarism/>.

**EXPECTED LEARNING OUTCOMES:** Upon completion of Math 4322, the students should have a solid knowledge of the material including (but not limited to) the topics outlined below:

1. Complex Numbers and Their Properties
2. Functions of a Complex Variable
3. Mappings of the Complex Plane
4. Continuity, Differentiation, Analyticity
5. Cauchy Integral Formula and Theorem
6. Liouville’s Th., Fundamental Th. of Algebra
7. Taylor & Laurent Series, Isolated Singularities
8. Residues and Applications to Integration

**EXPECTATIONS FOR OUT-OF-CLASS STUDY:** Beyond the time required to attend each class meeting, students enrolled in this course should expect to spend at least additional **15 hours per week** of their own time in course-related activities, including reading required materials, completing assignments, (if necessary) watching video recordings of lectures, preparing for exams, etc.

**DROP POLICY:** At the end of each term, students enrolled in face-to-face and online classes categorized as “lecture”, “seminar”, or “laboratory” are directed to complete a Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student’s feedback via the SFS is aggregated with that of other students enrolled in the course. Students’ anonymity will be protected to the extent that the law allows. UT Arlington’s effort to solicit, gather, tabulate, and publish student feedback is required by state law and aggregate results are posted online. Data from SFS is also used for faculty and program evaluations. For more information, visit <http://www.uta.edu/sfs>.

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**DISABILITY ACCOMODATIONS:** UT Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including *The Americans with Disabilities Act (ADA)*, *The Americans with Disabilities Amendments Act (ADAAA)*, and *Section 504 of the Rehabilitation Act*. All instructors at UT Arlington are required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of that disability. Students are responsible for providing the instructor with official documentation in the form of **a letter certified** by the staff in the Office for Students with Disabilities (OSD). Only those students who have officially documented a need for an accommodation will have their request honored. Students experiencing a range of conditions (Physical, Learning, Chronic Health, Mental Health, and Sensory) that may cause diminished academic performance or other barriers to learning may seek services and/or accommodations contacting:

The Office for Students with Disabilities, (OSD) [www.uta.edu/disability](http://www.uta.edu/disability) or calling 817-272-3364. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at [www.uta.edu/disability](http://www.uta.edu/disability)

Counseling and Psychological Services, (CAPS) [www.uta.edu/caps/](http://www.uta.edu/caps/) or calling 817-272-3671 is also available to all students to help increase their understanding of personal issues, address mental and behavioral health problems and make positive changes in their lives.

**NON-DISCRIMINATION POLICY:** The University of Texas at Arlington does not discriminate on the basis of race, color, national origin, religion, age, gender, sexual orientation, disabilities, genetic information, and/or veteran status in its educational programs or activities it operates. For more information, visit [uta.edu/eos](http://uta.edu/eos).

**FINAL REVIEW WEEK:** For semester-long courses, a period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week *unless specified in the class syllabus*. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

**TITLE IX POLICY:** The University of Texas at Arlington (“University”) is committed to maintaining a learning and working environment that is free from discrimination based on sex in accordance with Title IX of the Higher Education Amendments of 1972 (Title IX), which prohibits discrimination on the basis of sex in educational programs or activities; Title VII of the Civil Rights Act of 1964 (Title VII), which prohibits sex discrimination in employment; and the Campus Sexual Violence Elimination Act (SaVE Act). Sexual misconduct is a form of sex discrimination and will not be tolerated. *For information regarding Title IX, visit [www.uta.edu/titleIX](http://www.uta.edu/titleIX) or contact Ms. Michelle Willbanks, Title IX Coordinator at (817) 272-4585 or [titleix@uta.edu](mailto:titleix@uta.edu)*

**EMERGENCY EXIT PROCEDURES:** Should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit. When exiting the building during an emergency, one should never take an elevator but should use the stairwells. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist individuals with disabilities.

**EMERGENCY PHONE NUMBERS:** In case of an on-campus emergency, call the UT Arlington Police Department at **817-272-3003** (non-campus phone), **2-3003** (campus phone). You may also dial **911**. Non-emergency number 817-272-3381.

**CAMPUS CARRY:** Effective August 1, 2016, the Campus Carry law (Senate Bill 11) allows licensed individuals to carry a concealed handgun in buildings on public university campuses, except in locations the University establishes as prohibited. Under the new law, openly carrying handguns is not allowed on college campuses. For more info, visit <http://www.uta.edu/news/info/campus-carry/>

**ACADEMIC SUCCESS CENTER:** The Academic Success Center (ASC) includes a variety of resources and services to help you maximize your learning and succeed as a student at the University of Texas at Arlington. ASC services include supplemental instruction, peer-led team learning, tutoring, mentoring and TRIO SSS. Academic Success Center services are provided at no additional cost to UTA students. For additional information visit: [Academic Success Center](#). To request disability accommodations for tutoring, please complete this [form](#).

**GRIEVANCES:** If you experience a conflict with your instructor, first try and resolve the matter with your instructor. For issues that remain unresolved after this contact, including grade discrepancies or complaints, a grievance may be filed with the Mathematics Department by completing the departmental Grievance form at <https://go.uta.edu/mathgrievance>. Students not satisfied with the departmental decision may appeal to the College of Science. It is imperative for students to follow the proper procedure for their grievance to be reviewed.

**FACE COVERINGS:** While the use of face coverings on campus is no longer mandatory, all students and instructional staff are strongly encouraged to wear face coverings while they are on campus. This is particularly true inside buildings and within classrooms and labs where social distancing is not possible due to limited space. If a student needs accommodations to ensure social distancing in the classroom due to being at high risk, they are encouraged to work directly with the Student Access and Resource Center to assist in these accommodations. If students need masks, they may obtain them at the Central Library, the E.H. Hereford University Center's front desk or in their department.

**COURSE SCHEDULE:**

W 1	Complex Numbers and Their Properties	W 9	Cauchy Int. Theorem and Formula
W 2	Complex Numbers and Their Properties	W 10	Liouville's Th, Fundam. Th of Alg.
W 3	Functions of Complex Variables (FCV): Geometry	W 11	Taylor & Laurent Series
W 4	FCV: Continuity, Differentiation, Analyticity	W 12	Taylor & Laurent Series
W 5	Analytic & Harmonic FCV, Unique Continuation	W 13	Isolated Singularities
W 6	Exponential and Logarithmic Functions, Branches	W 14	Residues and Applications
W 7	Contour Integrals, Simply Connected Domains	W 15	Residues and Applications
W 8	Cauchy Integral Theorem, Cauchy Integral Formula	W 16	Conformal Mappings

*The instructor of this course reserves the right to adjust this schedule in any way that serves the educational needs of the students enrolled in this course.*

**IMPORTANT DATES:**

September 10, Friday	Census Date
October 14 (tentatively)	Midterm Exam
November 5, Friday	Last day to drop classes
November 25-26	Thanksgiving Holidays
December 7, Tuesday	Last day of classes
December 14, Tuesday	Final Exam, 2:00 PM - 4:30 PM