



Functions of a Complex Variable with Applications

MATH 523-001 Fall 2026 — The University of North Carolina at Chapel Hill



Course Information

Credit Hours: 3 credits

Prerequisites: Math 523

Class Time: MWF 2:30pm–3:20pm

Class Location: Peabody Hall, Room 2028 (in-person)

Course Website: <https://uncch.instructure.com/courses/103129>

Instructor Information

Name: Dr Thomas G. J. Chandler (he/him/his)

Email Address: tgjchandler@unc.edu

Office Location: 210 Pittsboro St., Room 201

Office Hours: WR 10:30am–12:00pm (210 Pittsboro St., Room 201). *Office hours are subject to change. If you are unable to attend the scheduled office hours, please email me to arrange alternative meetings.*

Virtual Meetings: All virtual meetings will be hosted on Zoom (link available on Canvas)

Teaching Assistants Information

Name: Jacob Marlow

Email Address: jbmarlow@unc.edu

Office Hours: M 12:00pm–1:00pm (Chapman Hall, Room 435); F 12:00pm–1:00pm (Chapman Hall, Room 324C).



Course Content

Course Description

The algebra of complex numbers, elementary functions and their mapping properties, complex limits, power series, analytic functions, contour integrals, Cauchy's theorem and formulae, Laurent series and residue calculus, elementary conformal mapping and boundary value problems, Poisson integral formula for the disk and the half plane.



Course Texts & Materials

Required Textbook: This course will follow *Complex Variables and Applications* (9th Edition) by Brown and Churchill. This required textbook can be purchased from many popular retailers, including the [UNC Student Store](#).

Additional Textbooks: The textbook *Complex Analysis* by Gamelin provides additional mathematical details that may aid your technical understanding, while *Complex Variables: Introduction and Applications* by Ablowitz and Fokas is a standard graduate-level text in complex variables that also covers asymptotic methods.

Class Notes: Handwritten class notes, as well as homework and midterm solutions, will be regularly posted on Canvas.

Piazza: Questions related to the course material, problem sheets, examinations, or mathematics more generally should be posted on the course Piazza site (<https://piazza.com/unc/spring2026/math523>) or brought to Office Hours. Students are encouraged to reply to posts, which can be done anonymously. The instructors will be regularly contributing to Piazza.

Class Expectations: How to succeed in this course

Students are expected to attend and actively contribute to every class. Use of Office Hours and Piazza is highly recommended. Classes are informal, instructor-led lectures; interruptions for questions or observations are welcomed and encouraged—there are no “silly” questions. Office Hours provide opportunities to ask questions (about the course or its broader context) and to connect with fellow mathematicians. You do not need to have a specific question to attend office hours. Outside of the class, students are expected to read the textbook sections corresponding to each week’s material, complete and submit the weekly problem sheets, and work through additional practice problems from the textbook. Completing the problems sheets alone is not enough to excel in this course, you should be doing do additional textbook problems. Throughout the semester, the instructor will also share useful tips and resources to support learning



Course Assignments & Assessments

Grading Scale & Schema

Course Grade Determination: Weekly Homework (25%), Midterm 1 (20%), Midterm 2 (20%), Final Exam (35%)

Tentative Grade Scaling: Grades may be adjusted (curved) at the instructor’s discretion to ensure a fair distribution that reflects overall class performance. Any questions about grading should be emailed to the instructor.

Numerical Grade (%)	Letter Grade
93.5 and above	A
89.5 – 93.4	A-
86.5 – 89.4	B+
82.5 – 86.4	B
79.5 – 82.4	B-
76.5 – 79.4	C+
72.5 – 76.4	C
69.5 – 72.4	C-
66.5 – 69.4	D
59.5 – 66.4	D+
59.4 and below	F



Examinations

There will be three in-person exams for this course: two midterms and a final. All exams are closed book, and communication with anyone (inside or outside the class) is not permitted during the exams. There are no make-up exams. Students are expected to take all exams unless prior permission is obtained from the instructor; however, the final exam score may replace the lowest midterm score. Please notify the instructor as soon as possible if you anticipate any issues with taking these exams. Further details about each exam will be provided closer to the exam dates.

Exam	Date & Time	Location	Exam material
Midterm 1	13 th February 2:30pm–3:20pm	Peabody Hall, Room 2028	Chapters 1–4.5
Midterm 2	1 st April 2:30pm–3:20pm	Peabody Hall, Room 2028	Chapters 4.5–7
Final Exam	29 th April 8:00am–11:00am	To be announced	Cumulative with a focus on Chapters 8–10

Assessed Homework: Problem Sheets

A weekly problem sheet will be posted on Canvas focused on the content presented in the corresponding week's classes. Each sheet will require students to read pages out of the textbook and answer relevant questions. Students are encouraged to discuss the problems with classmates; however, the final write-up should be individual. Solutions should be neatly written, or typed using *e.g.* LaTeX, and submitted on Canvas as a pdf before the posted deadline. Resources for scanning and uploading your solutions are provided on Canvas.

Grading: The problem sheet grades are cumulative, but the two lowest scores will be dropped.

Deadlines: The problem sheets will be uploaded to Canvas on Friday and due the following Friday by 11:59pm. A grace period of 6 hours will be given for submission, however any submissions during this period (without prior permission) will be docked 10%. Submissions after the grace period will not be accepted. The instructor should be informed of any problems with completing the assigned homework as soon as possible.

Non-Assessed Work: Further Work and Practice Exams

On top of the assessed homework, further work may be posted on Canvas and handed out in class but will not be collected or graded, this includes practice exam questions. This work is intended to help consolidate your knowledge and prepare you for the exams. Any questions about the non-assessed work should be posted on Piazza or brought to Office Hours.

Course Schedule

Typical Week Summary

A typical week has the following meetings/deadlines:

Monday: TA Office Hours (12:00pm–1:00pm); Class (2:30pm–3:20pm)

Tuesday:

Wednesday: Instructor Office Hours (10:30am–12:00pm); Class (2:30pm–3:20pm)

Thursday: Instructor Office Hours (10:30am–12:00pm)

Friday: TA Office Hours (12:00pm–1:00pm); Class (2:30pm–3:20pm); Homework deadline (11:59pm)



Class Material Schedule

This course will tentatively follow the schedule (sections refer to the course textbook):

Week	Monday	Wednesday	Friday
1	01/05 No Class: Winter Break	01/07 FDOC; 4§1.1–1.5	01/09 §1.6–1.9
2	01/12 §1.10–1.11	01/14 §1.12, 2.1–2.2	01/16 §2.3–2.4
3	01/19 No Class: MLK Jr. Day	01/21 §2.6–2.7	01/23 §2.7–2.9
4	01/26 §2.9–2.11	01/28 §2.13–2.15	01/30 §3.1, 3.8, 3.10
5	02/02 §3.2–3.5	02/04 §3.4, 3.6–3.7	02/06 §4.1–4.4
6	02/09 No Class: Well-Being Day	02/11 §4.4–4.5	02/13 Midterm 1
7	02/16 §4.10	02/18 §4.12–4.13	02/20 §4.14–4.15
8	02/23 §4.14–4.15	02/25 §4.17–4.18	02/27 §4.17–4.18
9	03/02 §5.1–5.2	03/04 §5.3, 5.5	03/06 §5.5–5.7, 5.9
10	03/09 §6.1–6.2	03/11 §6.2–6.3	03/13 §6.5–6.10
—	03/16 No Class: Spring Break	03/18 No Class: Spring Break	03/20 No Class: Spring Break
11	03/23 §6.5–6.10	03/25 §7.1–7.2	03/27 §7.1–7.2
12	03/30 §7.5–7.7	04/01 Midterm 2	04/03 No Class: Spring Holiday
13	04/06 §8.1–8.3	04/08 §8.4–8.13	04/10 §8.4–8.13
14	04/13 §8.4–8.13	04/15 §9.1–9.3	04/17 §9.1–9.3
15	04/20 §9.5–9.6	04/22 §10	04/24 §10
16	04/27 Beyond Math 523; LDOC	04/29 Final Exam	



Policy Statements

Academic Policies

University Class Attendance Policy

University Policy: As stated in the University’s [Class Attendance Policy](#), no right or privilege exists that permits a student to be absent from any class meetings, except for these University Approved Absences:

1. Authorized University activities: [University Approved Absence Office \(UAAO\)](#) website provides information and [FAQs for students](#) and [FAQs for faculty](#) related to University Approved Absences
2. Disability/religious observance/pregnancy/short-term military service, as required by law and approved by the [University Compliance Office](#), or in the case of short-term military service, the Dean of Students
3. Significant health condition and/or personal/family emergency as approved by the [Office of the Dean of Students](#), [Gender Violence Service Coordinators](#), and/or the [University Compliance Office](#).

Code of Conduct

All students are expected to adhere to university policy and follow the guidelines of the UNC Student Code of Conduct. Additional information can be found at <https://studentconduct.unc.edu/>.

Artificial Intelligence (AI) Use Policy

All Carolina students are expected to follow these AI guidelines:



1. AI should help you think, not think for you. You may be able to use these tools to brainstorm ideas, research topics, and analyze problems, but you must decide what's appropriate and accurate.
2. Engage responsibly with AI. You must evaluate AI-generated outputs for potential biases, limitations, inaccuracies, false output, and ethical implications. Do not put personal or confidential data into these tools.
3. The use of AI must be open and documented. You should declare, explain, and cite any use of AI in the creation of your work using applicable standards (e.g., APA, MLA, course guidelines). Understand that you are ultimately 100% responsible for your final product.
4. Follow specific AI guidelines in this syllabus. If you are unsure, check with me. Guidance offered in this syllabus would be referenced should an issue be referred to Student Conduct for alleged academic misconduct.
5. **Assistive AI Use Only:** AI tools can be used for non-content-generating tasks, such as grammar checking, formatting, or organizing ideas, but it cannot create new intellectual content. AI tools may not be used to generate mathematical logic or proofs, solve equations, or perform similar tasks when completing the assessed homework, but may be used to check spelling and grammar.

Syllabus Changes

The instructor reserves the right to make changes to the syllabus including project due dates and test dates. These changes will be announced as early as possible.

Acceptable Use Policy

By attending the University of North Carolina at Chapel Hill, you agree to abide by the University of North Carolina at Chapel Hill policies related to the acceptable use of IT systems and services. The Acceptable Use Policy (AUP) sets the expectation that you will use the University's technology resources responsibly, consistent with the University's mission. In the context of a class, it's quite likely you will participate in online activities that could include personal information about you or your peers, and the AUP addresses your obligations to protect the privacy of class participants. In addition, the AUP addresses matters of others' intellectual property, including copyright. These are only a couple of typical examples, so you should consult the full [Information Technology Acceptable Use Policy](#), which covers topics related to using digital resources, such as privacy, confidentiality and intellectual property.

Additionally, consult the [Safe Computing at UNC](#) website for information about data security policies, updates, and tips on keeping your identity, information, and devices safe.

Data Security & Privacy

UNC-Chapel Hill is committed to fulfilling its responsibilities of transparency as a state-sponsored institution of higher learning, protecting certain types of information, and using information Carolina collects only for appropriate purposes. Consult the [UNC-Chapel Hill Privacy Statement](#) for additional information.

Grade Appeal Process

If you have any concerns with grading and/or feel you have been awarded an incorrect grade, please discuss it with me as soon as possible. If we cannot resolve the issue, you may talk to our director of undergraduate studies or department chair.

Services & Student Support Policies

University Compliance Office (formerly Equal Opportunity and Compliance) - Accommodations

University Compliance Office (UCO) Accommodations Team ([Accommodations - UNC Equal Opportunity and Compliance](#)) receives requests for accommodations for disability, pregnancy and related conditions, and sincerely held



religious beliefs and practices through the University's Policy on Accommodations. UCO Accommodations team determines eligibility and reasonable accommodations consistent with state and federal laws.

Counseling & Psychological Services (CAPS)

UNC-Chapel Hill is strongly committed to addressing the mental health needs of a diverse student body. The [Heels Care Network](#) website is a place to access the many mental health resources at Carolina. CAPS is the primary mental health provider for students, offering timely access to consultation and connection to clinically appropriate services. Go to the [CAPS website](#) or visit their facilities on the third floor of the Campus Health building for an initial evaluation to learn more. Students can also call CAPS 24/7 at 919-966-3658 for immediate assistance.

Title IX Resources

Any student who is impacted by discrimination, harassment, interpersonal (relationship) violence, sexual violence, sexual exploitation, or stalking is encouraged to seek resources on campus or in the community. Reports can be made [online to the UCO](#) or by contacting the [University's Title IX Coordinator](#), Elizabeth Hall, or the [Report and Response Managers](#) in the University Compliance Office (UCO) (formerly the Equal Opportunity and Compliance Office). Please note that I am designated as a Responsible Employee, which means I must report to the UCO any information I receive about the forms of misconduct listed in this paragraph. If you'd like to speak with a confidential resource, those include Counseling and Psychological Services, the University's Ombuds Office, and the [Gender Violence Services Coordinators](#). Additional resources are available at [safe.unc.edu](#).

Policy on Non-Discrimination

As set out in the University's [Policy Statement on Non-Discrimination](#), the University is committed to providing an environment where all members of our community can learn, work, and thrive. Consistent with these principles and applicable laws, it is therefore the University's policy not to discriminate on the basis of age, color, disability, gender, gender expression, gender identity, genetic information, national origin, race, religion, sex, sexual orientation or veteran status as consistent with the University's [Policy on Prohibited Discrimination, Harassment and Related Misconduct](#). No person, on the basis of protected status, shall be excluded from participation in, be denied the benefits of, or be subjected to unlawful discrimination, harassment, or retaliation under any University program or activity, including with respect to employment terms and conditions. The University will consider only relevant factors such as individual abilities and qualifications in admissions, hiring, disciplinary action, and all other decisions and will apply consistent standards of conduct and performance.

If you are experiencing harassment or discrimination, you can seek assistance and file a report through the Report and Response Coordinators (email reportandresponse@unc.edu or see additional contact info at [safe.unc.edu](#)) or the [University Compliance Office](#). Please note that I am designated as a Responsible Employee, which means that I must report to the UCO any information I receive about harassment or discrimination. If you'd like to speak with a confidential resource, those include Counseling and Psychological Services and the University's Ombuds Office.

Undergraduate Testing Center

The College of Arts and Sciences provides a secure, proctored environment in which exams can be taken. The Center works with instructors to proctor exams for their undergraduate students who are not registered with ARS and who do not need testing accommodations as provided by ARS. In other words, the Center provides a proctored testing environment for students who are unable to take an exam at the normally scheduled time (with pre-arrangement by your instructor). For more information, visit the [testing center website](#).



Learning Center

Want to get the most out of this course or others this semester? Visit [UNC's Learning Center](#) to make an appointment or register for an event. Their free, popular programs will help you optimize your academic performance. Try academic coaching, peer tutoring, STEM support, ADHD/LD services, workshops and study camps, or review tips and tools available on the website.

Writing Center

For free feedback on any course writing projects, check out UNC's Writing Center. Writing Center coaches can assist with any writing project, including multimedia projects and application essays, at any stage of the writing process. You don't even need a draft to come visit. To schedule a 45-minute appointment, review quick tips, or request written feedback online, visit [UNC's Writing Center online](#).