

**COURSE DESCRIPTION**  
**COMPLEX ANALYSIS**  
**MA 445/545-OP**  
**SUMMER 2022**

DEPARTMENT OF MATHEMATICS  
UNIVERSITY OF ALABAMA AT BIRMINGHAM

**Course Instructor:** Rudi Weikard  
**Office:** UH 4032  
**Zoom:** <https://uab.zoom.us/my/rudi.weikard>  
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**Office Hours:** MW 12:30 pm – 1:30 pm and by appointment

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**Meeting times:** MWF 9:40 am — 11:00 am  
**Meeting location:** UH 2010  
**Prerequisite:** Grade of C or better in MA 227 or equivalent  
**Credits:** 3 semester hours  
**Textbook:** No textbook required. Lecture notes will be posted online  
**Canvas:** <https://www.uab.edu/elearning/canvas/>  
**UAB United:** <https://www.uab.edu/uabunited/students>

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**Important dates:**

**First day of classes:** June 6  
**Last day to Drop/Add:** June 13  
**Juneteenth Holiday:** June 20  
**Independence Day Holiday:** July 4  
**Last day of classes:** August 4 (for this class)  
**Grades available online:** August 17

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**Course content:**

- The complex numbers
- Differentiation
- Integration
- Analytic functions
- Cauchy's theorem and some of its consequences
- Isolated singularities and the calculus of residues
- A zoo of functions

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**Aims of the course:**

The course aims for students to attain *conceptual understanding* and *procedural*

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*Date:* June 1, 2022.

*fluency* with regard to the basic material of Complex Analysis. *Conceptual understanding* is demonstrated by the ability to explain solutions of assigned problems and to develop proofs of the claims made in the lecture notes. *Procedural fluency* is demonstrated by exercising routine tasks in an assured and timely fashion. The course also emphasizes *critical thinking* and *communication skills*, both written and verbal.

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**Methods of teaching and learning:**

- Students study the lecture notes providing missing details outside of class. A significant time commitment is to be expected.
- Working in groups is encouraged but not required.
- Students may seek outside help (books, internet, class mates) as they see fit as long as any help is acknowledged.
- 25 class meetings of 75 minutes where students present the course material prepared in written form ahead of time.

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**Assessment procedures:**

- (1) There are no quizzes or tests. Neither is there a Final Exam.
- (2) Points are earned through work on the course material, presentations of that work, and course participation as explained below.
- (3) Preparation of papers:
  - (a) The material in the lecture notes is organized as Exercises and Theorems.
  - (b) For each Exercise or Theorem students prepare papers. Up to four students may collaborate in the preparation of a paper. Papers must have a title (the title of the topic treated) and must list the author or authors.
  - (c) There are also Definitions and Notations with which students need to be familiar but they don't need preparation or presentation.
- (4) Presentation of papers:
  - (a) Students are selected randomly to present their work. This selection occurs just before class. Since random numbers are not distributed evenly for finitely many trials I may, if necessary, intercede to get a more even distribution of selections.
  - (b) Upon being selected a student may decline to present. This diminishes a student's chance to earn points.
  - (c) Upon being selected and accepting the task students share their paper with the class explaining all details (many of which are missing in the notes).
  - (d) 20 points will be awarded for the *correct* presentation of a topic. 8 points are awarded to the presenter while the remaining points are distributed equally among the authors of the paper (including the presenter). Up to four authors are allowed per paper.
- (5) Course participation:
  - (a) Being present in class is strongly recommended in case your name is being called to be the next presenter. There is, however, no penalty for being absent unless your name is called; your absence is then counted as a decline, see (4b).

- (b) Sometimes a presentation may involve mistakes or issues may remain unclear. Students are encouraged to ask questions for additional clarification.
- (c) Asking a relevant question will earn between 1 and 5 points at the discretion of the instructor.
- (d) Giving correct answers is part of a successful presentation, i.e., a presentation earning points.
- (6) Letter grades in 434: If we cover all material of the lecture notes, the student with the highest score  $S$  will receive an A. An A, B, C, or D is earned by anyone who has at least 90%, 70%, 50%, or 30% of  $S$ , respectively.
- (7) Letter grades in 534: The same procedure is used in 534 except that  $S$  is replaced with  $1.2S$ .
- (8) Should we fall short of covering all material the highest score will earn a B and the procedure is modified accordingly.

#### Course policies:

- Please make sure that you are able to receive e-mails through your Blazer-ID account. Official course announcements may be sent to that address.
- If you are contacted via the Early Alert Program, you should consider taking advantage of the services it offers. Various services to assist you are also listed at <https://www.uab.edu/students/home/services>.

#### Tips:

- By working steadily and regularly, you will increase your chances to succeed in this course.
- Remember, being a full-time student is a full-time job.
- Seek help when you need it.

#### Disability Support Services

UAB is committed to providing an accessible learning experience for all students. If you are a student with a disability that qualifies under the Americans with Disabilities Act (ADA) and/or Section 504 of the Rehabilitation Act, and you require accommodations, please contact Disability Support Services for information on accommodations, registration and procedures. Requests for reasonable accommodations involve an interactive process and consist of a collaborative effort among the student, DSS, faculty and staff. If you are registered with Disability Support Services, please contact me to discuss accommodations that may be necessary in this course. If you have a disability but have not contacted Disability Support Services, please call (205)934-4205 or visit <http://www.uab.edu/dss>.

**Title IX Statement** The University of Alabama at Birmingham is committed to providing an environment that is free from sexual misconduct, which includes gender-based assault, harassment, exploitation, dating and domestic violence, stalking, as well as discrimination based on sex, sexual orientation, gender identity, and gender expression. If you have experienced any of the aforementioned conduct, we encourage you to report the incident. UAB provides several avenues for reporting. For more information about Title IX, policy, reporting, protections, resources and supports, please visit the UAB Title IX webpage for UAB's Title IX

Sex Discrimination, Sexual Harassment, and Sexual Violence Policy; UAB's Equal Opportunity and Discriminatory Harassment Policy; and the Duty to Report and Non-Retaliation Policy.