

MATH A 174-Spring 2026
Discrete Math for Computer Science
(Three Credits)

Lecture: MW 12:00 PM - 1:15 PM B & E 235

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URL at USCA: <http://sciences.usca.edu/math/~mathdept/rli/>

URL at USCA: <https://www.usca.edu/research/undergraduate-research/rao-li-lab/>

Google Scholar: https://scholar.google.com/citations?user=MQiI_RsAAAAJ&hl=en

Android app: <https://play.google.com/store/apps/details?id=com.dismathinyourhands.mathprojectraoli>

Web Version: <https://wztech0192.github.io/knowledge-hub/>

Office Hours: MW: 10:30 AM – 12:00 PM and 2:00 PM – 3:00 PM;
by appointment.

Prerequisite: By math placement above AMTH 111, completion of either AMTH 111 or AMTH 170 with a grade of C or better.

Optional Textbook: Discrete Mathematics and Its Applications, by Kenneth H. Rosen, 7th Edition, McGraw-Hill, <http://www.mhhe.com/rosen>.

Course descriptions: It will cover basic concepts and methods needed for the study of computer science. In particular, the following topics will be studied. Logics, sets and set operations, the principle of inclusion-exclusion, permutations and combinations, the pigeonhole principle, elementary number theory, relations and their properties, graphs, trees, mathematical induction, and applications of discrete mathematics.

Course objectives: Students will learn basic concepts and methods in discrete mathematics and their applications. It is expected that the students will master the basic concepts and methods in discrete mathematics and be able to use the theory and methods learned in this course in the future studies of computer science and mathematics. It is also hoped that students will appreciate the peculiar features of discrete mathematics that the traditional continuous mathematics does not possess.

Tentative topics:

1. Logic.
2. Sets and Their Operations.
3. The Principle of Inclusion-Exclusion
4. Methods of Counting.
5. The Pigeonhole Principle.
6. The Elementary Number Theory.

7. Matrices.
8. The Applications of Matrices.
9. Relations and Properties of Relations.
10. Graphs and Trees.
11. The Applications of Graphs and Trees.
12. Mathematical Induction.

Grading: Attendance: 5%; Homework: 30%; Midterm Exam: 30%; Final Exam: 35%.
A: 90-100; B⁺: 85-89; B: 80-84; C⁺: 75-79; C: 70-74; D⁺: 65-69; D: 60-64; F: 0-59.

Homework: To obtain full credit, homework must be turned in at the assigned time. Homework will have the numeric grade discounted 25% for each day it is late.

Academic calendar: <http://www.usca.edu/records/calendars.html>

Academic code of honesty: Please read and review the Academic Code of Conduct relating to Academic Honesty located in the Student Handbook. If you are found to be in violation of the Code of Honesty, a grade of F will be given for the work.

Special circumstances: If you have a physical, psychological, and/or learning disability which might affect your performance in this class, please contact the Office of Disability Services in the Student Educational Support Building Suite 104 (phone: 803-643-6815) as soon as possible. The Disability Services Office will determine appropriate accommodation based on medical documentation.

Mode of instruction: The University of South Carolina Aiken reserves the right to change, adjust, and/or cancel any campus operation, including but not limited to, mode of instruction, delivery of services, or use of campus facilities, whenever the campus administration determines in its sole discretion that circumstances warrant the operational change.

University stuff, Title IX: Title IX of the Education Amendments of 1972 is a federal law that prohibits discrimination on the basis of sex of students and employees of educational institutions that receive federal financial assistance. USC Aiken does not discriminate on the basis of sex in its educational programs and in other activities operated by the University and is required by Title IX, and specifically 34 C.F.R. § 106.11, not to discriminate in such a manner. This extends to current students, current employees, and applicants for employment or admission to the University.

If you or someone you know has experienced sex discrimination, sexual violence and/or harassment by any member of the University community, you are encouraged to report the conduct to USC Aiken's Coordinator of Title IX & Civil Rights at (803) 641-3442. Additional resources are available at <https://www.usca.edu/title-ix/>

Mental health: Mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. Confidential and free services are available to assist you with addressing these and other

concerns you may be experiencing. You can learn more about mental health services available on campus and in the community via the Counseling Center website (<https://www.usca.edu/departments/counseling-center/>) or by calling 803-641-3609. If you are having a mental health emergency, you may call the Aiken County HELP LINE at 877-648-9900.

Academic support services: Academic support services are available in the Library and the PARC (Pacer Academic Resource Center) located in the Library. These services include academic coaching, tutoring, the Math Lab, and advising assistance.

AI policy of the USC system: All undergraduate and graduate courses must have a course syllabus that includes a statement regarding the use of generative artificial intelligence (AI) tools (e.g., ChatGPT). The syllabus must make the expectations about AI use in the course explicit, whether limited, encouraged, or prohibited – so students understand what is and is not permitted.

Portable electronic devices: Electronic devices should only be used in the classroom for purposes required for successfully completing the course. Under any other circumstances, they must be turned off and stowed away for the duration of the class period. The instructor reserves the right to ban laptops, tablets, and cell phones from class if they are causing distractions or being used for anything other than classwork.

The writing center: The WC serves all members of the USCA community (undergraduate students, graduate students, faculty, and staff) as they work to become successful writers and speakers. WC tutors are trained to provide one-on-one feedback on any writing in any stage of development. While the WC welcomes the opportunity to assist clients with their writing, it does not function as an editing service. The WC is located on the first floor of H&SS. The WC welcomes walk-ins but appointments are strongly recommended, especially during the busiest times of the semester (mid-terms and finals). Visit usca.mywconline.com to schedule an appointment online.

