

Syllabus: CS 381, Fall 2025

Course Title: Introduction to Discrete Structures

Course Number: CS381

Credits: 3 hours

Contact Hours: lecture 3 hours

Instructor: Dr. Chunjiang Zhu

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TA: Dommanige, Chameli cdomm001@odu.edu

Class Location & Time: DRAGAS HALL 1117, MWF 11:00 am - 11:50 am

Office Hours: MW 1:00 pm - 1:45 pm or by appointments

Textbook(s): Rosen, Kenneth H., Discrete Mathematics and Its Applications, 8th ed., McGraw Hill

Catalog Description:

Topics include propositional and predicate logic, rules of inference, methods of proof, set operations, functions, complexity of algorithms, growth of functions, induction, counting, relations, equivalence relations and graphs.

Prerequisites: MATH 163 and a grade of C or better in CS 150/151/153, or DASC 257 or ENGN 122

Course Objectives:

Upon successful completion of this class, students will be able to:

1. demonstrate familiarity and understanding of the discrete structures, including sets, sequences, functions, matrices, and graphs
2. development of abstraction and representation skills for real-world problems
3. justify and prove statements
4. express ideas precisely using proper mathematical and computer science vocabulary

Topics Covered:

- Logic and Proofs (Propositional Logic, Predicate Logic, Rules of Inference, Proofs)
- Sets, Functions & Matrices
- Algorithms, Growth of Functions (Big O, Big Omega)

- Induction and Recursion (Mathematical Induction, Strong Induction and Well Ordering, Recursive Definitions and Structural Induction, Recursive Algorithms)
- Counting & Combinatorics
- Graphs (Graphs and Graph Models, Graph Terminology and Special Types of Graphs, Representing Graphs and Graph Isomorphism, Connectivity, Euler and Hamiltonian Paths)
- Optional: Trees (Introduction to Trees, Tree Traversal, Spanning Trees)

Grading Criteria:

In this course, your final grade will be calculated based on the following categories:

Criteria	Percentage
Attendance and Participation	3%
Homework (8-9)	37%
Mid-term Exam	25%
Final Exam	35%

* Students with an attendance rate lower than 60% will automatically get an F grade except for extremely rare cases.

Letter Grade Assignment:

	[87.5 , 89.5) = B+	[77.5 , 79.5) = C+	[67.5 , 69.5) = D+	[0 , 59.5) = F
[91.5 , ∞) = A	[81.5 , 87.5) = B	[71.5 , 77.5) = C	[61.5 , 67.5) = D	
[89.5 , 91.5) = A-	[79.5 , 81.5) = B-	[69.5 , 71.5) = C-	[59.5 , 61.5) = D-	

Course Policies

Attendance Policies: Attendance is mandatory. The attendance rate is calculated as $\min\{A/(T-2), 100\}$, where A and T are the number of attended classes over the total number of classes. It contributes to 3% of the total grade. But, students with an attendance rate lower than 60% will automatically get an F grade except for extremely rare cases. Note that class meetings will not be simply information delivery – that’s what the textbook is for – but will focus largely on working through and solving problems similar to those on assignments and exams.

The university allows for a limited number of excused absences for religious observances. Students who plan to take such an absence should notify the instructor at least two weeks in advance so that accommodations can be made. It is the student’s responsibility to obtain notes from another student if they miss class.

Late Policy and Makeup Exams: Penalties for late work will be specified in the instructions for each assignment. Exam/test dates will be announced at least two weeks in advance, and may be made up only if it was missed due to an extreme emergency and arrangements are made before the exam date. Exams may not be taken early or late due to personal travel plans.

Academic Integrity

The Office of Student Accountability and Academic Integrity oversees the administration of the student conduct system, as outlined in the Code of Student Conduct. Through their interactions with students, they seek to foster a climate of personal and academic integrity that facilitates the success of all members of the University community. For more information, please visit [Student Accountability & Academic Integrity](#)

Honor Code

We are ODU Monarchs, and we value integrity, good citizenship, and honor.

Please review what Monarch Citizenship means and the ODU Honor Pledge:

Honor Code: “We, the students of Old Dominion University, aspire to be honest and forthright in our academic endeavors. Therefore, we will practice honesty and integrity and be guided by the tenets of the Monarch Creed. We will meet the challenges to be beyond reproach in our actions and our words. We will conduct ourselves in a manner that commands the dignity and respect that we also give to others.”

Educational Accessibility and Accommodations

If you experience a disability that will impact your ability to access any aspect of my class, please present me with an accommodation letter from OEA so that we can work together to ensure that appropriate accommodations are available. If you feel that you will experience barriers to your ability to learn or take tests in my class but do not have an accommodation letter, please consider scheduling an appointment with OEA to determine if academic accommodations are necessary.

The Office of Educational Accessibility is located in the Student Success Center 1021 and can be reached at 757-683-4655. Additional information can be found on the OEA website: [Office of Educational Accessibility](#)

AI Use Guidelines

Use of ChatGPT and similar such tools is only allowed during offline study. You are solely responsible for the correctness and intellectual property issues of the AI response. **However, use of AI tools is strictly prohibited for homework assignments and exams.**

Counseling Services Statement

Old Dominion University is committed to advancing the mental health and wellbeing of its students and recognizes that, at times, personal stressors can interfere with academic performance and daily life. The Office of Counseling Services supports students' mental and emotional wellbeing by providing confidential virtual and in person individual, group counseling, crisis intervention, and referral services at no cost. Schedule a same day/next day appointment at [Make a counseling Appointment](#).

[The Office of Counseling Services](#) is located in the Student Recreation and Well-being Center.

If there is ever an immediate concern for your safety or the safety of another individual, please call 911 In case of a mental health emergency (e.g., thoughts or plans to kill yourself, thoughts of seriously harming others, recent sexual assault). Crisis services are available 24/7 by calling 757- 683-4401 and press Option 2 to speak to a crisis counselor. You may also call the Suicide & Crisis Lifeline (988), and/or utilize the Crisis Text Line (text “HOME” to 741741).

Withdrawal

Enrollment in this course indicates your acceptance of its teaching focus, requirements, and policies. Please review the syllabus and the course requirements as soon as possible. If you feel that the nature of this course does not meet your interests, needs or expectations, if you are not prepared for the amount of work involved – or if you anticipate that the class meetings, assignment deadlines or adherence to course policies will be an unacceptable hardship for you – you should drop the course by the drop/add deadline, which is listed in the [ODU Schedule of Classes](#).

Elasticity Statement

It is the intention of the instructor that this syllabus and course calendar will be followed as outlined, however, as the need arises there may be adjustments to the syllabus and calendar. In such cases, the instructor will notify the students in class and via e-mail with an updated syllabus and calendar within a reasonable timeframe to allow students to adjust as needed.