

Discrete Structures (Math 2183) (CRN#60225)

Fall 2024, TTh 11:00AM-12:15PM

Professor: Dr. Jeongho Ahn

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Text: Discrete Mathematics and Its Applications, 8th Edition by K. H. Rosen,
Publisher: McGraw-Hill.

Prerequisites:

- High School Algebra II and ACT22 or SAT580 or
- MATH1054 (Precalculus Mathematics) or
- MATH1023 (College Algebra) and MATH1033 (Plane Trigonometry) or
- MATH1023 (College Algebra) and CS2114 (Structured Programming)

Course Description: We will cover Chapters 1-9. Their topics are as follows:

- Ch.1:The Foundations:Logic and Proofs
- Ch.2:Basic Structures:Sets, Functions,Sequences,and Sums
- Ch.3:Fundamentals:Algorithms and its Complexity
- Ch.4:Number Theory
- Ch.5:Induction and Recursion
- Ch.6:Counting Methods
- Ch.7:Introduction to Discrete Probability
- Ch.8:Advanced Counting Techniques:Recurrence Relations, Inclusion-Exclusion
- Ch.9:Relations and Their Properties
- Ch.10:Graphs and Their Properties

Student learning outcomes for MATH 2183:

- Students will understand mathematical reasoning and proofs.
- Students will be able to read, comprehend, and construct mathematical arguments.
- Students will be able to perform combinatorial analysis to count or enumerate discrete objects.

- Students will be able to represent discrete objects using the abstract mathematical structures such as sets, permutations, relations, and graphs.
- Students will be able to describe an algorithm and evaluate the time required for performance of an algorithm.

MATH 2183 is linked to the following student learning outcomes for the B.S. /B.S.E. Mathematics degree programs:

- The graduate of the B.S./B.S.E. Mathematics degree programs will employ mathematical terminology and notation accurately.
- The graduate of the B.S./B.S.E. Mathematics degree programs will communicate mathematics with clarity and effective exposition.
- The graduate of the B.S./B.S.E. Mathematics degree programs will read and interpret written material in mathematics effectively.
- The graduate of the B.S./B.S.E. Mathematics degree programs will experience interconnections within mathematics through employing mathematical proof, mathematical reasoning, and abstract thinking.
- The graduate of the B.S./B.S.E. Mathematics degree programs will possess the skills to read, interpret, and analyze mathematical problems.
- The graduate of the B.S./B.S.E. Mathematics degree programs will possess the ability to employ appropriate techniques, methods, and procedures in solving mathematical problems.
- The graduate of the B.S./B.S.E. Mathematics degree programs will demonstrate competence transferring mathematical reasoning to written statements of mathematical proof through the use of definitions, theorems, and formal mathematical statements.

B.S. Mathematics program learning outcome supported by MATH 2183:
upon completion of the B.S. Mathematics program, students will be able to

- demonstrate the ability to think analytically to decipher challenging problems, utilize appropriate mathematical practices to construct mathematical arguments to solve them, and interpret their solutions.
- demonstrate the ability to construct logical arguments and write formal mathematical proofs to establish the truth of mathematical statements.
- demonstrate the ability to communicate mathematics effectively.

Grading

- Quizzes:10% In-class tests:60% Final exam:30%
- Grades are assigned on the following basis:

	A	B	C	D	F
From	90	80	70	60	0
To	100	89	79	69	59

Homework & Quizzes

- It is expected that you will complete each homework. We note that diligent completion of homework is essential to successful completion of this course. So you should plan on spending at least a hour of work outside of class for each hour of class time to be successful.
- There will be a quiz **every Thursday class**.

Tests & Final Exam

- You will take **three** in-class tests during the semester.
- You will see the dates for each test in assignment sheets.
- The Final Exam is comprehensive and may include all materials covered during the semester.
- **The Final Exam Schedule: Dec 10 (Tuesday), 12:30PM - 2:30PM**

Last Day to Drop by web: November 22 (Fri)

Class Policies

1. Attendance: As stated in the student handbook, “Students should attend every lecture, recitation, and laboratory session of every course in which they are enrolled.” Students who have more than **four unexcused absences** or **two consecutive unexcused absences** will be assigned an “F” for this course. When possible, you should give advanced notice of absences. If you miss more than four classes, please come to see me.
2. Academic Dishonesty: When you take a test, you are not allowed to communicate in any fashion with anyone except myself. In addition, you are not allowed to view another student’s work, share paper or calculators.
3. Demeanor:
 - (1) If you **distract** other students from studying during class, you will be asked to leave class. If it is the second time, you will be administratively dropped.
 - (2) **Please turn your cellular phone off before you come to class.**
 - (3) **You are not allowed to put your phone in the desk and to go to a bathroom, when you take all the quizzes or the tests.**
4. Make-ups: There is no make-up of exams and quizzes, including the final, if I am not notified in advance.

Additional Notes

- The course plan may be modified during the semester. Such modifications will be announced during class periods; the students have responsibility for keeping up with such changes.
- Students who require academic adjustments in the classroom due to a disability must first register with ASU Access & Accommodation Services. Following registration and within the first two weeks of class, please contact me to discuss appropriate academic accommodations. Appropriate arrangements can be made to ensure equal access to this course.

- Tutoring centers:
 1. KOL Math Commons Tutoring is located in this building.
 2. Smart Center is located in the science building.
 3. Learning Commons is located in the Dean B. Ellis Library.

Dr. Jeongho Ahn's Schedule for Fall 2024

	Monday	Tuesday	Wednesday	Thursday	Friday
9:00					Office Hours
10:00	Diff. Eqs Math 4403 CSM 131	Office Hours	Diff. Eqs Math 4403 CSM 131	Office Hours	Diff. Eqs Math 4403 CSM 131
11:00	Office Hours	Discrete Struc. Math 2183 HSS 2028		Discrete Struc. Math 2183 HSS 2028	
12:00					
1:00	Calculus II Math 2214 HSS 2028	Calculus II Math 2214 HSS 2028		Calculus II Math 2214 HSS 2028	Calculus II Math 2214 HSS 2028
2:00					

**If the above office hours conflict with your schedule,
please email me to arrange a meeting time.**