Discrete Structures (Math 2183) (CRN#60369)

Fall 2018, TR 11AM-12:15PM

Professor: Dr. Jeongho Ahn
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Prerequisites:
- High School Algebra II and ACT22 or SAT560 or
- MATH1054 (Precalculus Mathematics) or
- MATH1023 (College Algebra) and MATH1033 (Plane Trigonometry) or
- MATH1023 (College Algebra) and CS2114 (Structured Programming)

Course Description: We plan to cover Chapters 1-10. 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.E Mathematics student learning outcomes supported by MATH 2183**

• **Content Knowledge:** Effective teachers of secondary mathematics demonstrate and apply knowledge of major mathematics concepts, algorithms, procedures, connections, and applications within and among mathematical content domains.

• **Mathematical Practices:** Effective teachers of secondary mathematics solve problems, represent mathematical ideas, reason, prove, use mathematical models, attend to precision, identify elements of structure, generalize, engage in mathematical communication, and make connections as essential mathematical practices. They understand that these practices intersect with mathematical content and that understanding relies on the ability to demonstrate these practices within and among mathematical domains and in their teaching.
Grading

- Quizzes: 10%  In-class tests: 60%  Final exam: 30%

- Grades are assigned on the following basis:

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Homework & Quizzes

- It is expected that you will complete each homework. We note that diligent completion of homework assignments is essential to success of this course. So you should plan on spending at least two hours of work outside of class for each hour of class time.

- 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: December 6 (Thursday), 12:30PM - 2:30PM

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 will be assigned an “F” for this course. When possible, you should give advanced notice of absences. If you miss more than three classes, please come to see me.

2. Calculators: You may use a basic calculator for this course.

3. Academic Dishonesty:
   (1) 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.
   (2) Please turn your cellular phone off before you come to class.
   (3) You are not allowed to put your phone on the desk, when you take all the tests.
   (4) You are not allowed to go to a bathroom, when you take all the tests.

4. Demeanor: 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. Please turn your cellular phone off before you come to class.

5. 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 Disability 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.

Last Day to Drop a Course or Withdraw from the University: November 14 (Wednesday)

Dr. Jeongho Ahn’s Schedule for Fall 2018

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