

ECEN 227 - Introduction to Finite Automata and Discrete Mathematics

Dr. Mahmoud Nabil
mnmahmoud@ncat.edu





North Carolina A & T State University

January 13, 2020

Introduction

- **Course Description:** An introduction to applied discrete mathematics as it relates to computer engineering.
- **TA:** Justin Blackman
- **Credits:** 3
- **Prerequisite:** ECEN 101 (Prob Solving With MATLAB)
- **Materials:** An online book has been set up for the course at www.zybooks.com. Go to this website and create account. Once you have an account, use to the following book code for this course: NCATECEN227NabilSpring2020. You will be instructed on how to purchase the book (\$58).
- **Course Materials:** Please visit Blackboard
- **Class Schedule:** This class meets on MWF 1:00-1:50 AM in McNair, Room 130.
- **Office Hours:** MWF 10:00-1:00 AM in McNair, Room 555

References to be used

-  Sandy Irani
Discrete Mathematics
Discrete Math zyBook.
-  Kenneth H. Rosen
Discrete Mathematics and Its Applications, 7th Edition
McGraw-Hill, New York, NY, 2012.
-  Susanna S. Epp
Discrete Mathematics with Applications, 4th Edition
Brooks/Cole Publishing Company, Pacific Grove, California, 2011.
-  Ding-Zhu Du, Ker-I Ko
Problem Solving in Automata, Languages, and Complexity, 4th Edition
John Wiley & Sons, Inc, New York, 2001

Intended Learning Outcomes (1/2)

- Utilize mathematical reasoning to read, comprehend, and construct mathematical arguments.
- Solve basic counting problems with combinatorial analysis.
- Utilize basic discrete structures appropriately to model, analyze, and solve problems.
- Specify algorithm design using pseudocode.
- Explain how propositional logic is related to computation

Intended Learning Outcomes (2/2)

- Verify algorithm operation.
- Analyze time complexity of algorithms.
- Apply discrete mathematics to practical scenarios
- Utilize graph theory to model systems
- Demonstrate proofs for mathematical theorems

Course Outline

| Topics Covered | Week | Tentative Testing Date |
|-------------------------|-------------------------------------|---------------------------|
| Set Theory | 1-13, 1-15, 1-17 | Exam #1 Feb 21st |
| Functions | 1-22, 1-24, 1-27 | |
| Propositional Logic | 1-29, 1-31, 2-3 2-5, 2-7, 2-10 | |
| Proofs | 2-12, 2-14, 2-17 | |
| Number Theory | 2-24, 2-26, 2-28 | Exam #2 Apr 8th |
| Algorithms | 3-9, 3-11, 3-13 3-16, 3-18, 3-20 | |
| Counting Techniques | 3-23, 3-25, 3-27 | |
| Induction and Recursion | 30-3, 4-1, 4-3 | |
| Relations | 4-10, 4-13 | Exam #3 Apr 22nd |
| Graphs | 4-15, 4-17, 4-20 | |
| Trees + all concepts | 4-24, 4-27, 4-29 | Final Exam May 6th |

Grade Evaluation

Grading Scale

- A = 90 to 100
- A- = 86 to 89
- B+ = 83 to 85
- B = 80 to 82
- B- = 76 to 79
- C+ = 72 to 75
- C = 69 to 71
- C- = 65 to 68
- D+ = 62 to 64
- D = 59 to 61
- D- = 56 to 58
- F = 55 or below

| Category | Weight |
|-----------------------------|--------|
| Quizzes (Approx. weekly) | 15% |
| Homework (Quiz Preparation) | 10% |
| Exams | 50% |
| Final Exam | 25% |

Academic Integrity

- Academic integrity violations, when submitting course-related work, will result in the loss of credit for the specific assignment, quiz, individual project or exam, or a grade of F for the course. Repeated academic integrity violations may lead to dismissal from the University.
- To review the North Carolina A & T State University's Academic Dishonesty Policy, please see the following URL: [Here](#) (pp. 42-43)

Policies (1/5)

Attendance Policy: Attendance in **NOT** calculated into the final grade, however regular attendance is essential to understanding the course material.

Grade Adjustment Policies:

- Each quiz and homework grade will be **curved** such that the three highest grades received is the total possible points for the assignment.
- The 2 lowest quiz grades will be **dropped**.
- The 2 lowest homework grades will be **dropped**.
- Your grade on the final exam will replace the lowest of your 3 semester exam grades **ONLY** if it will improve your final grade

Policies (2/5)

Missed and Late Assignment Policy:

- Make-up exams will only be offered to students with excused absences for the day of the original exam.
- A **legitimate written excuse** is to be provided on the first day of the students return to class.
- More than **10 minutes** late on an exam day will constitute an absence, in which case the student will not be allowed to take the exam, and a written excuse will be needed in order for a make-up exam to be scheduled.

Computer Usage During Quizzes and Exams:

- The **ONLY** type of computing device that students will be allowed to use during a quiz or exam will be a **stand-alone calculator**, ONLY if permitted by the instructor for that quiz or exam.
- Use of general purpose computing devices (i.e., laptops, desktops, tablets, cell phones, etc.) is **forbidden** during a quiz or exam in all cases.
- One page **single side cheat sheet** is allowed during exams.

Policies (4/5)

Cell Phone (smart device, etc.) Usage Policy:

- All cellphones should be **SILENCED** prior to the beginning of the class lecture, and should remain silenced at all times during the lecture.
- If essential, then the student should step out of the classroom before using the phone.
- **Points Deductions**
 - The first cellphone disturbance will serve as a **warning**.
 - After the warning, anyone caught disturbing the class with cell phone usage during a lecture will have **one point deducted** from their final grade for the course.
 - After the warning, any cell phone usage during a test or quiz will result in an automatic **zero grade** for that test or quiz.
 - These rules apply to all students whether they are present at the time of the warning or not.
- **Repeated Offenses** by an individual will be reported to the Provosts Office

Policies (5/5)

Policy for Leaving Class During an Exam or Quiz: Once an exam or a quiz starts, students will **NOT be allowed** the leave and then re-enter the classroom to complete the quiz or exam. Before leaving the classroom, the student must turn in the quiz or exam, which will be graded **AS IS**. NO make-up quiz or test will be given in this situation.

Thank
You!



Questions 

