

Lecture 1: Course Info,

CS 5002: Discrete and Data Structures

Adrienne Slaughter, Tamara Bonaci

Northeastern University

September 6, 2018

Agenda

- Course Overview/Structure
- Intro to Logic
- Number Representations

What is Discrete Math?

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A set of branches of math that deal with “discrete” rather than “continuous” numbers/concepts.

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e.g.: Analog vs Digital Watch

Why Discrete Math?

Discrete Math is:

- The math of computing
- It's Real World Math
- Teaches mathematical reasoning and proof techniques
- Required for software specification (logic)

Some Topics

- logic and Boolean algebra
- set theory
- relations and functions
- sequences and series (or "sums")
- algorithms and theory of computation
- number theory
- matrix theory
- induction and recursion
- counting and discrete probability
- graph theory (including trees)

Lecture time: Thursdays from 9:30 — 12:30pm in 225 Terry, Room 306

■ Instructors:

- Adrienne Slaughter (a.slaughter@northeastern.edu)
 - Office hours in Lummi classroom:
 - TBD
 - By appointment
- Tamara Bonaci (t.bonaci@northeastern.edu)
 - Office hours in Lummi classroom:
 - TBD
 - By appointment

CS 5002: Discrete and Data Structures

TAs:

- Josh Veden
- Collin Smith
- Ankur Bohra
- Yuan Cai
- Simeng Hua
- Anthony Meiser
- Brian Lam
- Shitan Yang
- Min Dai

Course materials: Rosen (7th ed), Course website

Course discussion board: Piazza

Course assignment submission: NEU Blackboard

Assignment grades: NEU Blackboard

What is CS 5002, Fall 2018?

Intensive exploration of discrete math, data structures, and analysis of algorithms.

- Intended for students in the Align MS in CS program

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- 1 Teach you how to count!
- 2 Give you the math background you need to be successful in CS
- 3 Familiarize you with data structures

CS 5002 Fall 2018: Course Outcomes

At the end of this course, you should be able to:

- Count!
- Reason logically
- Recognize sets
- Describe and manipulate graphs

(Expected) Course Progression

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- Week 7: Lists, stacks and queues.

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- Week 8: Midterm

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- 6-9pm, 401 Terry Ave N, Room 106C.

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- Week 12: Thanksgiving! Algorithm correctness, proofs.

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- Week 14: Runtime analysis of algorithms, Complexity classes.

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- Week 15: Final

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Course Logistics: Grading

Course will be graded based upon:

- Homework assignments: 60%
- Midterm: 15%
- Final: 15%
- Quizzes: 10%

Course Logistics: Homework

Thirteen written assignments assignments

- Submitted via Blackboard
- Due on Sundays, midnight.

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- If you have a request for an extension for some other reasonable reason, you must talk to me **in advance**.

Collaboration and Academic Integrity

- You can talk to others about the ideas, but all write-ups and answers must be your own.

Course Materials

Website

- <https://course.ccs.neu.edu/cs5002f18-seattle>

Required

- Discrete Math and its Applications, Kenneth Rosen, 8th Edition

Other Resources:

- Will be posted on <https://course.ccs.neu.edu/cs5002f18-seattle/resources.html> as the semester progresses

Tips for Success

- Read the assigned material
- Attempt to solve additional problems
- Attend lectures
- Talk to the course staff
- Keep up

Questions?