

MET CS 526 Data Structures and Algorithms

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Course Overview

In this course we will explore, describe and illustrate fundamental data structures. We will use those fundamental data structures to support the implementation of algorithms. We will develop a deep understanding of algorithmic design and analysis to enhance computational problem-solving skills with hands-on assignments. Through the assignments you will gain and understand the tradeoffs between efficiency, correctness, and other resources when choosing algorithms. There will be a number of assignments ranging in complexity to illustrate the creation and execution of algorithms to solve real world problems.

There will be a number of assignments targeted to challenge your understanding of data structures and analysis techniques. Some of the assignments will be challenging and may take time to solve. Please look at the assignments when they are assigned and read the instructions carefully.

Course Materials and Slides

The course material was developed and sourced from Dr. Alan Burstein to provide continuity of the CS526 from semester over semester.

Grading

Graded Item	%
Class Participation	10
Homework Assignments	50
Mid-Term	20
Final Project	20
	100

Late Policy

All work is due on the assigned dates. If you have issues completing an assignment or need an extension for personal reasons please contact the instructor as early as possible. A 10% per day penalty will be incurred for late work without receiving an extension.

Plagiarism

The focus of this class will be to learn and explore algorithms and data structures. Submit only original work, the use of any of the AI tools is not permitted. Students are encouraged to discuss issues with myself, other students and tutors. The submitted work however must be original. Spot checks on submissions may be done to verify that you understand your answers and that the work is in fact yours.

Office hours

I am an adjunct instructor – I will try to be at our classroom (or classroom near by) from 5-6 before class. You can also request remote help via zoom.

Resources

- Lecture Slides
- Instructor facilitated sessions
- Optional Textbooks
 - Michael T. Goodrich, Roberto Tamassia, and Michael T. Goldwasser (2013). *Data Structures and Algorithms in Python* – 1st Edition -- John Wiley & Sons -- ISBN-13: 978-1118290279
 - Michael T. Goodrich, Roberto Tamassia, and Michael T. Goldwasser (2014). *Data Structures and Algorithms in Java* – 6th Edition -- John Wiley & Sons -- ISBN-13: 978-1118771334

Syllabus

Part 1

Review

- Basic Programming
- Object Oriented Concepts
- Arrays
- Linked Lists

- Recursion

Part 2

- Algorithm Analysis
- Stacks and Queues

Part 3

- Lists
- Trees
- Hash Maps
- Maps

Part 4

- Searching
- Sorting
- Dynamic Programming

Part 5

- Graph Algorithms
- Computational Complexity

Class Participation

Class participation is highly encouraged and will count for 10% of your grade.

Homeworks/Exams

Assignment	Assigned	Due
Homework1	First Class	Second Class
Homework2	9/24	10/1
Homework3	10/1	10/8
Homework4	10/12	10/19
MidTerm	10/27	10/29
Homework5	11/5	11/12
Homework6	11/12	11/19
Homework7	11/19	11/25
Final	12/8	12/15