

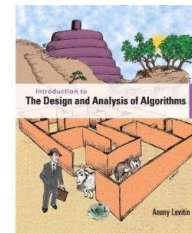
CSCI-237: 2018FA
Data Structures and Algorithms
Department of Mathematics & Computer Science
School of Natural Sciences & Mathematics

Instructor	Ramaier Sriram	Office	JST-111/112
Phone	(803) 535-5522	Email	RSriram@Claflin.edu
Office Hours	1:00 – 3:00 TR	Class Time	MW 4:00 – 5:15
	11:00 – 1:30 MWF		R 9:30 – 10:45 (Lab)
		Class Location	JST-109 MW, JST 323 R

Course Description

This course is an introduction to data structure and algorithms. Specifically, this course shall teach techniques for representing and processing information, including the use of lists, trees, and graphs; algorithm design strategies; analysis of algorithms; sorting, searching, and hashing techniques.

Textbook: Introduction to the Design and Analysis of Algorithms
3rd Edition, 2012
Anany Levitin
ISBN-10: 0132316811
ISBN-13: 9780132316811
Publisher: Addison-Wesley



Course Outcomes

Students will be able to:

- CO1:** Explain and use fundamental data structures: queues, stacks, lists, and graphs
- CO2:** Explain and use brute force algorithms
- CO3:** Explain and use divide and conquer algorithms
- CO4:** Apply Graph methods greedy algorithms
- CO5:** Explain and use non-recursive and recursive algorithms
- CO6:** Explain and use Hashing, Heaps, Dynamic Programming
- CO7:** Express computational, asymptotic complexity of algorithms

Assessment of Course Outcomes

Outcomes	Methods of Assessment
CO1: Explain and use fundamental data structures: queues, stacks, lists, and graphs	HW1, Quiz1, Midterm
CO2: Explain and use brute force algorithms	HW2, Quiz2, Midterm
CO3: Explain and use divide and conquer algorithms	HW3, Quiz3, Midterm
CO4: Apply graph methods greedy algorithms	HW4, Quiz4, Final
CO5: Explain and use non-recursive and recursive algorithms	HW5, Quiz5, Final
CO6: Explain and use dynamic programming	HW6, Quiz6, Final

ABET-CAC Course Outcomes – Student Outcomes Mapping

ABET CAC Criteria & Student Outcomes http://www.abet.org/accreditation-criteria-policies-documents/			Course Outcomes					
			1	2	3	4	5	6
ABET CAC CRITERIA (STUDENT OUTCOMES)	a	An ability to apply knowledge of computing and mathematics appropriate to the discipline	1	-	1	3	-	-
	b	An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution	1	2	2	2	1	2
	c	An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs	-	-	-	-	-	-
	d	An ability to function effectively on teams to accomplish a common goal	1	1	1	1	1	1
	e	An understanding of professional, ethical, legal, security and social issues and responsibilities	-	-	-	-	-	-
	f	An ability to communicate effectively with a range of audiences	-	-	-	-	-	-
	g	An ability to analyze the local and global impact of computing on individuals, organizations, and society	-	-	-	-	-	-
	h	Recognition of the need for and an ability to engage in continuing professional development	-	-	-	-	-	-
	i	An ability to use current techniques, skills, and tools necessary for computing practice.	-	-	-	-	-	-
	j	An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices	-	1	1	3	-	1
	k	An ability to apply design and development principles in the construction of software systems of varying complexity.	1	3	3	2	2	3

Class Discussion Schedule (Subject to change)

Textbook Chapters	Week
Chapter-1: Introduction	Week 1
Chapter-2: Fundamentals of the analysis of algorithm efficiency	Week 2 and 3
Chapter-3: Brute force and exhaustive search	Week 4
Chapter-5: Divide and conquer	Week 5
Midterm Exam	
Chapter-8: Dynamic programming	Week 6
Chapter-6: Transform and conquer	Week 7
Chapter-9: Greedy techniques	Week 8 and 9
Chapter-10: Iterative improvement	Week 10
Chapter-11: Limitations of algorithm power	Week 11
Final Exam	

Assessment Policy

Class participation	5%
Test 1, Test 2 (MT), Test 3	30%
Final Exam	15%
Reading Quizzes	10%
In-class Quizzes	10%
Homework Assignments	15%
Programming Assignments	15%

- Notes: (i) **NO MAKEUP EXAMS** will be given without proper excuse from the Vice President for Student Development and Services **NO EXCEPTIONS!!!**
- (ii) Homework Assignments and Reading Quizzes due in moodle, on date and time. No late submissions.
- (iii) Most importantly remember that all your questions are valid. If you don't understand any discussion or topic covered in class, pause me and ask questions to improve your understanding.
- You are encouraged to work in a group. **However, the work you turn in must be your' s solely.**

Grading Scale

A	cumulative points ≥ 90
B+	$85 \leq$ cumulative points < 90
B	$80 \leq$ cumulative points < 85
C+	$75 \leq$ cumulative points < 80
C	$70 \leq$ cumulative points < 75
D	$60 \leq$ cumulative points < 70
F	cumulative points < 60

Code of Honor Policy Statement

Claflin University prohibits all forms of academic or scholarly dishonesty, including written or oral examinations, term and research papers or theses, modes of creative expression, and computer-based work. Scholarly dishonesty includes lying, cheating, plagiarism, collusion, and the falsification or misrepresentation of experimental data. (For social behavior, see *Claflin University Student Handbook: Code of Conduct and Code of Ethics*).

Assurance Statement

If you may need special accommodations in this class related to a disability, please make an appointment with the Office of Disability, as soon as possible. Please contact Sadie Jarvis with Disability Services at (803) 535-5285, sjarvis@claflin.edu, Carson Hall Room 121.

Early Alert Statement

This program is designed to assist with your success and will be given a high priority as a strategy for this class. Should your instructor determine that you need additional help, you will be referred to the Academic Success Center. The Academic Success Center will assist you in successfully completing the course.

It is further expected that you will comply with the referral and take advantage of the services offered. Such referrals are solely intended to enable you reach and achieve your academic and personal goal.

Attendance

Students are expected to attend all classes for which they are registered for the duration of each class session. Students may be allowed as many unexcused absences as hours a course meets weekly. The maximum number of excused absences is at the discretion of each instructor. Unexcused absences on the days immediately preceding or following a holiday are counted as double-absences. Excessive absences are reported during each grade reporting period by the instructor in the database provided through MyClaflin.

Students may obtain official university excuses for absences from the Office of Student Development and Services or other designated campus officials. After students obtain signatures from the appropriate course instructors, all excuses must be returned to the Office of Student Development and Services.

Students who may miss classes while representing the university in an official capacity are exempt from regulations governing absences only to the extent that their excessive absences result from the performance of such university business or affairs. Absence from class for any reason does not relieve the student from responsibility for any class assignments that may be missed during the period of absence.

A 10 percent point-penalty will apply to cumulative score when a student has > 3 unexcused absences.

Guidelines for Civil and Responsible Use of Personal Technology
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- ✓ Turn your cell phone completely off or leave it in silent mode inside your book bag;
- ✓ In rare case of an emergency when you think you need to leave it on, inform the instructor;
- ✓ Do not use the cell phone once you enter the class room and during the class meeting;
- ✓ Use of cell phone during exam, quiz is prohibited.