George Mason University
CS 583 – Analysis of Algorithms – 3 credits

General Information

Course Information	
Course:	CS583
Format:	Lecture
Sections:	002, 005, DL3
Semester:	Spring 2025

Instructor/GTA	
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Course Information

COURSE DESCRIPTION

This course introduces basic algorithm design and analysis techniques, including asymptotic analysis. Topics include analyzing sequential and parallel algorithmic strategies such as greedy methods, divide and conquer strategies, dynamic programming, search and traversal techniques, and approximation algorithms; and analyzing specific algorithms falling into these classes, NP-Hard and NP-Complete problems. Offered by Computer Science. May not be repeated for credit.

Prerequisites: CS 310, CS 330 and MATH 125.

Enrollment limited to:
- Students with a class of Advanced to Candidacy, Graduate, Junior Plus, Non-Degree or Senior Plus.
- Graduate, Non-Degree or Undergraduate level students.
- Students in a Non-Degree Undergraduate degree may **not** enroll.
- Enrollment limited to students in the Engineering Computing college.

COURSE OBJECTIVES

After completing this course, you should be able to:
- Describe a variety of important AI applications and their importance.
- Describe different classic algorithms and their importance.
- Apply algorithms and techniques to solve specific problems.
- Explain the difference performance of algorithms based on their time complexity.
- Analyze computational resources for important problem types using alternative algorithms.

Course Resources

TEXTBOOKS AND READINGS

REQUIRED TEXTBOOK:
- Cormen, T., Leiserson, C., Rivest, R. and Stein, C. (2022) Introduction to Algorithms, 4th Ed. ISBN: 9780262046305
- Electronically available for free from GMU Library:
  https://ebookcentral-proquest-com.mutex.gmu.edu/lib/gmu/detail.action?docID=6925615

Grading Information

GRADING SCALE

The following table describes the grading system:

GRADE	PERCENTAGE
A+	97 and above
A	>= 92 and <97
A-	>= 90 and <92
B+	>= 87 and <90
B	>= 84 and <87
B-	>= 80 and <84
C	>= 70 and <80
F	Less than 70

LETTER GRADING DESCRIPTIONS:

Listed below are grades and academic standards for each grade awarded.
- **A:** Consistently performs above and beyond the course/assignment requirements.
- **B:** Meets and occasionally exceeds the course/assignment requirements.
- **C:** Minimally meets the course/assignment requirements.
- **F:** Fails to meet the course/assignment requirements.

LETTER GRADING DESCRIPTIONS:

Listed below are grades and academic standards for each grade awarded.
- **D:** Consistently performs above and beyond the course/assignment requirements.
- **E:** Meets and occasionally exceeds the course/assignment requirements.
- **F:** Minimally meets the course/assignment requirements.
- **G:** Fails to meet the course/assignment requirements.

CATEGORIES AND WEIGHTS

The following table lists the types of graded activities in this course and each category's weight in the final course grade.

CATEGORY	PERCENT	NOTES
Homework	40%	1 lowest dropped.
Midterm exam	25%	Cheat sheet up to 2 pages allowed.
Final exam	35%	**Cumulative**. *Cheat sheet as specified for the midterm.

ASSIGNMENTS

All class-related assignments are considered **individual efforts** unless explicitly expressed (in writing).
Late coursework will not be accepted. A submission is considered on time if submitted electronically on Blackboard on or before required submission date/time. Once the submission link is closed, it is not reopened, and *email submissions are not accepted*.

Each assignment has its own specific link for submission, so you must verify that the correct files are submitted at the corresponding link. For example, if assignment 1 is submitted at the link for assignment 2, it will be marked as "incorrect submission" and a grade of 0 will be set.

It is the responsibility of the student to verify that the files are correct.
Please note that resubmissions are not accepted due to wrong file submissions or files that can't be open.

☛ It is not a wise decision to wait until the last minute to submit your assignment, this action may cause you not to submit your work or submit a wrong file.

GRADING

If you feel points have been incorrectly deducted, **contact the grader**. For homework, is your GTA. For exams, your professor. Regrade of assignments must be requested *at most 3 working days after the grade is published*. *No grade changes will be considered after that deadline*.

There is no compensation for a missed assignment or exam. Keep in mind that events such as *not having an Internet connection, not having electricity, going on a trip, being busy with other activities, buying a travel ticket in advance to visit family, etc*. are not a justification to have a make-up for a missed assignment or exam. Only if the circumstances prohibited you from attending class during an exam, you must contact the professor *at most 24 hours after the due date* and *attach formal supporting documentation* (Doctor's notice, etc.), otherwise your case will be dismissed.

MIDTERM AND FINAL EXAMS

- The midterm exam addresses key concepts and techniques presented in Modules 1 through 6.
- The final exam is cumulative. If you perform better on the final exam than on your midterm, the midterm grade is replaced with the final exam grade.

NOTES:

- **There is no curve for grades**; and you should never ask anyone for a curve.
- There will be no make-up assignments.
- There will be no more additional work to get extra points at the end of the semester.
- The grade cutoffs are already stipulated, if, your course grade is below the limit to escalate to the next grade, that is the final grade for the course. For example, if you got a 91, it's 91, not 92. If you got an 87, it's 87, not 88, etc.

Policies and Services

MASON HONOR CODE

GMU is an Honor Code university; please see the Office for Academic Integrity for a full description of the code and the honor committee process, and the Computer Science Departments Honor Code Policies regarding assignments. The principle of academic integrity is taken very seriously, and violations are treated gravely.

Student members of the George Mason University community pledge not to cheat, plagiarize, steal, or lie in matters related to academic work.

- All work is individual. You are not allowed to work with others on homework or any other graded materials.
- You are not allowed to discuss homework with others before submission except with the instructor or the TA.
- You are not allowed to work with ChatGPT or other AI/ML-based software/programs for problems assigned as homework.

For additional important information, including the Honor Code definitions of cheating, plagiarism, stealing, and lying, see the George Mason University Full Honor Code.

INDIVIDUALS WITH DISABILITIES

The university is committed to providing equal access to employment and educational opportunities for people with disabilities.

Mason recognizes that individuals with disabilities may need reasonable accommodations to have equally effective opportunities to participate in or benefit from the university educational programs, services, and activities, and have equal employment opportunities. The university will adhere to all applicable federal and state laws, regulations, and guidelines with respect to providing reasonable accommodations as necessary to afford equal employment opportunity and equal access to programs for qualified people with disabilities.
Applicants for admission and students requesting reasonable accommodations for a disability should call the Office of Disability Services at 703-993-2474. Employees and applicants for employment should call the Office of Equity and Diversity Services at 703-993-8730. Questions regarding reasonable accommodations and discrimination based on disability should be directed to the Americans with Disabilities Act (ADA) coordinator in the Office of Equity and Diversity Services.

EMAIL POLICY

Web: masonlive.gmu.edu

Mason uses electronic mail to provide official information to students. Examples include notices from the library, notices about academic standing, financial aid information, class materials, assignments, questions, and instructor feedback. Students are responsible for the content of university communication sent to their Mason e-mail account and are required to activate that account and check it regularly.

Students are also expected to maintain an active and accurate mailing address to receive communications sent through the United States Postal Service.

For email communication, use your Mason email, including the subject and your section. Please note that *emails sent on weekends will not be answered at that time and will be reviewed until Monday* and answered in the order they are received.

Additional Services and Policies

UNIVERSITY POLICIES

Students must follow the university policies. See University Policies.

DIVERSITY

George Mason University promotes a living and learning environment for outstanding growth and productivity among its students, faculty and staff. Through its curriculum, programs, policies, procedures, services and resources, Mason strives to maintain a quality environment for work, study and personal growth.

STUDENTS WITH DISABILITIES

Students with disabilities who seek accommodations in a course must be registered with the George Mason University Office of Disability Services (ODS) and inform their instructor, in writing, at the beginning of the semester.

UNIVERSITY LIBRARIES

University Libraries provides Library services for distance students.

WRITING CENTER

The George Mason University Writing Center staff provides a variety of resources and services (e.g., tutoring, workshops, writing guides, handbooks) intended to support students as they work to construct and share knowledge through writing.

You can now sign up for an Online Writing Lab (OWL) session just as you may sign up for a face-to-face session in the Writing Center, which means YOU set the date and time of the appointment.

COUNSELING AND PSYCHOLOGICAL SERVICES (CAPS)

The George Mason University Counseling and Psychological Services (CAPS) staff consists of professional counseling and clinical psychologists, social workers, and counselors who offer a wide range of services (e.g., individual and group counseling, workshops, and outreach programs) to enhance students' personal experience and academic performance.

FAMILY EDUCATIONAL RIGHTS AND PRIVACY ACT (FERPA)

The Family Educational Rights and Privacy Act of 1974 (FERPA), also known as the "Buckley Amendment," is a federal law that gives protection to student educational records and provides students with certain rights.