

Syllabus

Instructor

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Computer Science & Electrical Engineering Department

Office: ITE 226

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Office Hours: MoWe 11:00am – 12:30pm, Tu 2:30pm – 3:30pm, and by appointment.

Meeting Time and place

Section 1

MoWe 1:00pm – 2:15pm

Room: Sherman Hall 013

Section 2

MoWe 2:30pm – 3:45pm

Room: Sherman Hall 013

Section 3

TuTh 10:00am – 11:15am

Room: Performing Arts and Hum. 234

Teaching Assistants

- Li Xiaokai, Room: ITE 344
Email: VJ82854@umbc.edu
Office hours: Mo 4:00pm-5:00pm, Tu 1:00pm-2:00pm, and by appointment.
- Gadad Prajwal, Room: ITE 340
Email: ZS27171@umbc.edu
Office hours: We 4:00pm-5:00pm, Th 11:30am-12:30pm, and by appointment.
- Sharan Komal, Room: ITE 340
Email: XQ71651@umbc.edu
Office hours: MoWe 10:00am – 11:00am, and by appointment.

Prerequisites

CMSC-203, CMSC-341, MATH-152, and STAT-355.

Textbook

The course text is “*Introduction to Algorithms*”, Third Edition, by Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, and Clifford Stein. MIT Press, 2009.

List of Topics

- asymptotics and recurrences
- sorting and order statistics
- dynamic programming
- greedy algorithms
- basic graph algorithms
- minimum spanning trees
- shortest paths
- maximum flow
- hash tables
- NP-completeness

Course Objectives

In this course, students will: 1) learn the quantitative methods used in the analysis of algorithms, 2) learn to write explanations for the correctness of algorithms and justifications for their performance, and 3) sharpen their problem solving skills through the design of algorithms. An important goal of this course is to familiarize students with a range of fundamental algorithms.

Required Work

Required work consists of (1) taking the final exam, (2) six in-class quizzes and (3) thirteen homework assignments. Further, you are expected to actively participate in class discussions.

Homework Policy

Assignment details, due dates, etc. will be posted at the class homepage <https://www.csee.umbc.edu/~nikbar1/CMSC441.html> and the course blackboard <http://blackboard.umbc.edu>. Students are strongly advised to check the class homepage/course blackboard on a regular basis. Failure to do so is not an

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acceptable excuse for missing an assignment or for not adhering to the assignment's instructions.

- Assignments are due at the beginning of lecture. No late assignments will be accepted, unless University Policy states otherwise.
- Partial credit will be given for serious attempts on the homework problems. So you should simply turn in whatever you have accomplished by the beginning of class.
- If you cannot attend lecture when homework is due, for some honorable reason, you must make arrangements to submit your homework directly to the instructor and TA. Do not ask another student to submit your homework for you.
- No collaboration. Each assignment is to be done and written individually by each student. Students should not collaborate on any assignment.
- Students may be asked to come in and explain their solution(s) to an assignment to the instructor and/or TA. Failure to satisfactorily demonstrate authorship of a solution is a violation of Academic Integrity policy.

Students are strongly advised to keep up with the assignments and other coursework. Homework assignments do demand the amount of time allocated to them.

Quizzes

There are six in-class quizzes. The scheduled date of each quiz is posted at the class homepage <https://www.csee.umbc.edu/~nikbar1/CMSC441.html>.

Cumulatively quizzes account for 40% of your total grade. Make every effort to attend — unexcused absences will result in a grade of zero for that quiz. Each quiz will be held during the last 40 minutes of the class period.

Final Exam

The final exam will take place in class and will be closed–book and closed–notes.

Make–up exams are very rare and are possible only in the extreme conditions specified by University Policy. You should make prior arrangements with the instructor if you expect to miss an exam.

Each student should have his student photo identification card or driver's license when taking an exam. Failure to produce a proper photo ID may result in getting a zero on that exam.

Grading Policy

Final grades will be based upon homework assignments (30% total), quizzes (40% total), and the final exam (30%).

The syllabus lists 13 homework assignments and 6 quizzes. However, if a homework assignment or quiz is canceled and not made up (e.g., because school is closed for snow or hurricane), the proportion of your grade from homework, quizzes and the final exam will remain the same. That is, homework will still count for 30% of your grade and quizzes 40% of your grade (each homework or quiz will have greater weight).

The lowest homework grade that exceeds 40% will be dropped, if this increases your overall homework average. In particular, missed homework assignments will receive a grade of 0 and will not be dropped from the computation of your homework average. The intention of this policy is to allow students to disregard the homework grade from a "bad week" but not encourage students to completely ignore a homework assignment.

Your final letter grade is based on the standard formula:

$$0 \leq F < 60, \quad 60 \leq D < 70, \quad 70 \leq C < 80, \quad 80 \leq B < 90, \quad 90 \leq A \leq 100$$

Depending upon the final distribution of grades in the class, there may be a curve in your favor, but under no circumstances will grades be curved downward.

Incomplete grades will be issued only under those extreme situations described by University Policy for granting incompletes and *only if you have completed most of work for the semester*. Failure to complete assignments on time is not a sufficient reason for an incomplete.

Academic Integrity Policy

By enrolling in this course, each student assumes the responsibilities of an active participant in UMBC's scholarly community in which everyone's academic work and behavior are held to the highest standards of honesty. Cheating, fabrication, plagiarism, and helping others to commit these acts are all forms of academic dishonesty, and they are wrong. Academic misconduct could result in disciplinary action that may include, but is not limited to, suspension or dismissal. There is no tolerance for academic dishonesty in this course. Any and all academic dishonesty acts will be treated severely, as prescribed in the UMBC's Student Academic Conduct Policy.

The UMBC academic integrity policy is available at: <http://oue.umbc.edu/ai/>

ADA Compliance

We recognize that some of you may have disabilities that require special attention from the instructional staff. Please make us aware of them at your earliest so that UMBC can make suitable arrangements.