COLLEGE OF ENGINEERING, UIC
CS, 401, Computer Algorithms I, 4/3 (grad/undergrad)

I. Instructor & Course Details

Instructor Name: Bhaskar DasGupta
Email address: bdasgup@uic.edu
Drop-In Office Hours (in-person): Monday and Wednesday, 5:00 PM to 6:00 PM
Drop-In Hours location *(office number)*: 4464 CDRLC Bldg

Course Modality and Schedule *(UIC Syllabus Policy and HLC PRIORITY SECTION)*

This course is taught **ON CAMPUS**.
- DAYS and TIMES: Monday and Wednesday, 3:30 PM to 4:45 PM
- LOCATION: LC C1

II. Course Information

Catalog Course Description and Prerequisite/Corequisite Statement

Design and analysis of computer algorithms. Divide-and-conquer, dynamic programming, greedy method, backtracking. Algorithms for sorting, searching, graph computations, pattern matching, NP-complete problems. Course Information: Same as MCS 401. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Grade of C or better in MCS 360; or Grade of C or better in CS 251.

Growth Mindset:

Course materials and assignments can be complex and challenging, but they are crucial to your intellectual and personal growth and development. There are times you may need extra help. Students who attend class consistently, complete all assignments, thoughtfully engage with feedback on work, develop good study strategies, visit the tutoring center, and contact faculty when struggling can develop a thorough understanding of the course material and ultimately succeed in the course!

Course Goals and Learning Outcomes

REGULAR COURSES LEARNING OUTCOMES

1. Students will be able to identify core mathematical and algorithmic structures of computational problems.
2. Students will be able to design and analyze efficient computer algorithms for solving computational problems.
3. Students will be able to develop new innovative algorithmic techniques for solving computational problems.

Indicate whether a required or elective course in the program.

This is a required course in the program.

Brief list of topics to be covered.

- Some representative problems
- Basics of Algorithm Analysis
- Graphs
- Greedy Algorithms
- Divide and Conquer approach
- Dynamic Programming approach
- Network Flows
- Application of Network Flows
- Computational Intractability

Required and Recommended Course Materials

Required textbook (can be accessed/purchased via UIC library and bookstore):

- Jon Kleinberg and Eva Tardos, *Algorithms Design*, Addison Wesley, 2006, ISBN 0-321-29535-8

Required Technology

No special technology required.

Students may purchase **Adobe Creative Cloud** applications via [Webstore](#) and then access them using their license on their own device or via the UIC's Virtual Computer Lab. Students in financial hardship may request access to Adobe Creative Cloud when following the Webstore process for licensing requests. Remote access will require UIC's Virtual Private Network (VPN) services.

Respect for Copyright

Please protect the copyright integrity of all course materials and content. Please do not upload course materials not created by you onto third-party websites or share content with anyone not enrolled in our course.

III. COURSE POLICIES & CLASSROOM EXPECTATIONS

Grading Policy and Point Breakdown

The final exam will be comprehensive. Each assignment will involve solving some excercise problems and/or writing programs implementing some algorithm. Assignments must be handed in class on the date specified. Discussions with other students about assigments is allowed, but the work handed in must be the student's own work.

Assignment 1	10%
Assignment 2	10%
Assignment 3	10%
Midterm 1	20%
Midterm 2	20%
Final exam	30%

Policy for Missed or Late Work

Late assignments: Late assignments will not, in general, be accepted. They will never be accepted if the student has not made special arrangements with me at least one day before the assignment is due. If a late assignment is accepted it is subject to a reduction in score as a late penalty.

Incompletes: The UIC Undergraduate catalog states that in addition to needing excellent justification for an incomplete, a student must also have been "making satisfactory progress" in the course.

Statute of limitations: No grading questions or complaints, no matter how justified, will be listened to one week after the item in question has been returned.

Cheating: Cheating will not be tolerated. All work you submitted must be entirely your own. Any suspicious similarities between students' work (this includes homework and exams) will be recorded and brought to the attention of the Dean. The MINIMUM penalty for any student found cheating will be to receive a 0 for the item in question, and dropping your final course grade one letter. The MAXIMUM penalty will be expulsion from the University.

Classroom Conduct: Classroom discussions and questions are a valuable part of the learning process and are encouraged. However, students who repeatedly talk among themselves disrupting the class lecture will be asked to leave.

Attendance / Participation Policy

Please email me if you face an unexpected situation that may impede your attendance, participation in required class and exam sessions, or timely completion of assignments.

Other Course Policies: *(UIC Syllabus Policy and HLC PRIORITY SECTION)*

Academic Integrity

As a student and member of the UIC community, you are expected to adhere to the Community Standards of academic integrity, accountability, and respect. Please review the UIC Student Disciplinary Policy for additional information.

Email Expectations

Students are responsible for all information instructors send to your UIC email and Blackboard accounts. Faculty messages should be regularly monitored and read in a timely fashion.

IV. COURSE SCHEDULE

Weekly Schedule of Class Topics, Assignments, Assessments, Due Dates, and Deadlines

(Tentative only, subject to change based on class performance)

Week 1 (starting on 01/12/2026): Introduction, "Some representative problems"
Week 2 (starting on 01/19/2026): "Some representative problems", "Basics of Algorithm Analysis"
Week 3 (starting on 01/26/2026): "Basics of Algorithm Analysis", "Graphs"
Week 4 (starting on 02/02/2026): "Graphs", "Greedy Algorithms"
Week 5 (starting on 02/09/2026): "Greedy Algorithms"
Week 6 (starting on 02/16/2026): "Greedy Algorithms"
Week 7 (starting on 02/23/2026): "Divide and Conquer approach", 1st midterm exam
Week 8 (starting on 03/02/2023): "Divide and Conquer approach"
Week 9 (starting on 03/09/2023): "Divide and Conquer approach"
Week 10 (starting on 03/16/2026): "Dynamic Programming approach"
Week 11 (starting on 03/30/2026): "Dynamic Programming approach", 2nd midterm exam

Week 12 (starting on 04/06/2026): "Network Flows"
Week 13 (starting on 04/13/2026): "Network Flows", "Computational Intractability"
Week 14 (starting on 04/20/2026): "Computational Intractability"
Week 15 (starting on 04/27/2026): "Computational Intractability", concluding remarks
Week 16 (starting on 05/03/2026): Final exam (Final exam week)

Disclaimer

This syllabus is intended to give the student guidance on what may be covered during the semester and will be followed as closely as possible. However, as the instructor, I reserve the right to modify, supplement, and make changes as course needs arise. I will communicate such changes in advance through in-class announcements and in writing via Blackboard Announcements.

V. ACCOMMODATIONS

Disability Accommodation Procedures

UIC is committed to full inclusion and participation of people with disabilities in all aspects of university life. If you face or anticipate disability-related barriers while at UIC, please connect with the Disability Resource Center (DRC) at drc.uic.edu, via email at drc@uic.edu, or call (312) 413-2183 to create a plan for reasonable accommodations. To receive accommodations, you will need to disclose the disability to the DRC, complete an interactive registration process with the DRC, and provide me with a Letter of Accommodation (LOA). Upon receipt of an LOA, I will gladly work with you and the DRC to implement approved accommodations.

Religious Accommodations

Following campus policy, if you wish to observe religious holidays, you must notify me by the tenth day of the semester. If the religious holiday is observed on or before the tenth day of the semester, you must notify me at least five days before you will be absent. Please submit this form by email with the subject heading: **"YOUR NAME: Requesting Religious Accommodation."**

VI. CLASSROOM ENVIRONMENT

Inclusive Community

UIC values diversity and inclusion. Regardless of age, disability, ethnicity, race, gender, gender identity, sexual orientation, socioeconomic status, geographic background, religion, political ideology, language, or culture, we expect all members of this class to contribute to a respectful, welcoming, and inclusive environment for every other member of our class. If aspects of this

course result in barriers to your inclusion, engagement, accurate assessment, or achievement, please notify me as soon as possible.

Name and Pronoun Use

If your name does not match the name on my class roster, please let me know as soon as possible. My pronouns are *he/him*. I welcome your pronouns if you would like to share them with me. For more information about pronouns, see this page: https://www.mypronouns.org/what-and-why.

Community Agreement/Classroom Conduct Policy

- Be present by turning off cell phones and removing yourself from other distractions.
- Be respectful of the learning space and community. For example, no side conversations or unnecessary disruptions.
- Use preferred names and gender pronouns.
- Assume goodwill in all interactions, even in disagreement.
- Facilitate dialogue and value the free and safe exchange of ideas.
- Try not to make assumptions, have an open mind, seek to understand, and not judge.
- Approach discussion, challenges, and different perspectives as an opportunity to "think out loud," learn something new, and understand the concepts or experiences that guide other people's thinking.
- Debate the concepts, not the person.
- Be gracious and open to change when your ideas, arguments, or positions do not work or are proven wrong.
- Be willing to work together and share helpful study strategies.
- Be mindful of one another's privacy, and do not invite outsiders into our classroom.

Content Notices and Trigger Warnings

Our classroom provides an open space for a critical and civil exchange of ideas, inclusive of a variety of perspectives and positions. Some readings and other content may expose you to ideas, subjects, or views that may challenge you, cause you discomfort, or recall past negative experiences or traumas. I intend to discuss all subjects with dignity and humanity, as well as with rigor and respect for scholarly inquiry. If you would like me to be aware of a specific topic of concern, please email or visit my Student Drop-In Hours.

VII. RESOURCES: Academic Success, Wellness, and Safety

We all need the help and the support of our UIC community. Please visit my **office hours** for course consultation and other academic or research topics. For additional assistance, please contact your assigned college advisor and visit the support services available to all UIC students.

Academic Success
- UIC Tutoring Resources
- College of Engineering tutoring program
- Equity and Inclusion in Engineering Program
- UIC Library and UIC Library Research Guides.
- Offices supporting the UIC Undergraduate Experience and Academic Programs.
- Student Guide for Information Technology

Wellness
- **Counseling Services**: You may seek free and confidential services from the Counseling Center at https://counseling.uic.edu/.
- Access U&I Care Program for assistance with personal hardships.
- **Campus Advocacy Network**: Under Title IX, you have the right to an education free from any form of gender-based violence or discrimination. To make a report, email TitleIX@uic.edu. For more information or confidential victim services and advocacy, visit UIC's Campus Advocacy Network at http://can.uic.edu/.

Safety
- UIC Safe App—PLEASE DOWNLOAD FOR YOUR SAFETY!
- UIC Safety Tips and Resources
- Night Ride
- Emergency Communications: By dialing 5-5555 from a campus phone, you can summon the Police or Fire for any on-campus emergency. You may also set up the complete number, (312) 355-5555, on speed dial on your cell phone.