

CSI 3344: Introduction to Algorithms

Fall 2021

Instructor: Dr. G Michael Poor
Office: Hankamer 360.22
Email: michael_poor@baylor.edu
Office Hours: TBD

Course Textbook:

Required Text: Sanjoy Dasgupta, Christos H. Papadimitriou, Umesh Vazirani, Algorithms, 1st Edition, ISBN-13: 978-0073523408 ISBN-10: 0073523402

<http://algorithmics.lsi.upc.edu/docs/Dasgupta-Papadimitriou-Vazirani.pdf>

Other Resources: Other Resources will be posted on to Canvas when appropriate

Course Description:

This course will provide a comprehensive introduction to computer algorithms taken from diverse areas of application. This course will concentrate on algorithms of fundamental importance and on analyzing the efficiency of these algorithms.

Topics to be covered:

- Overview of algorithm analysis: mathematical techniques
- Sorting, search, selection and set manipulation: algorithms and analysis
- Major algorithm techniques: Divide and Conquer, Branch and Bound Search, Greedy Algorithms, Dynamic Programming
- NP-Completeness, approximate algorithms.

Learning Objectives:

This course introduces students to the analysis and design of computer algorithms. Upon completion of this course, students will be able to do the following:

- Analyze the asymptotic performance of computer algorithms.
- Demonstrate a familiarity with major algorithms and data structures.
- Apply important algorithmic design paradigms and methods of analysis.
- Synthesize efficient algorithms in common program design situations.

Grading:

Overall course grades will be computed based on a weighted average as shown below:

Programming Assignments	35%
Homework	20%
Midterms	20%
Final	25%

Grading Scale:

A: 92-100, A-: 91-90, B+: 88-89, B: 82-87, B-: 81-80, C+: 78-79, C: 72-77, C-: 71-70, D: 60-69, F: 0-59

Programming Assignments

Programming Assignments are individual efforts unless specified by the instructor. Programs are to be written in C++. For uniformity's sake, your program must be able to be compiled under at least 1 of the 3 options:

- Microsoft Visual Studio 2013 (or later)
- Xcode (for Apple)
- GNU g++

You are allowed to use c++-2011 standard, but will need to specify it when you hand in your programs.

Each assignment will consist of two parts: (1) Analysis and Algorithm, and (2) the C++ program. The assignment will be posted to Canvas and the analysis and algorithm will be uploaded as a LaTeX documentation or pdf. All files should be zipped and submitted through Canvas before the assigned due dates. If you miss a class, it is your responsibility to find out whether you have an assignment. No late work will be accepted.

Homework

Homework assignments to be handed-out one week before due date. Your work will be submitted in two ways depending on the task: 1) a PDF file – you may scan your handwriting homework into a SINGLE pdf file, or you can use any word processing tools (e.g. Microsoft Word) and convert it to PDF; 2) a *.ZIP file – which will contain ALL required files and documentation as outlined on the assignment sheet.

Mid-term

2 mid-terms will be given. Each mid-term will have 3-4 questions, broken into parts. Roughly half of the mid-terms will be similar to the homework and/or program.

Final exam

2 hour exam covering the material for the whole semester.

Class Policies:

Academic Honesty and University Policies

Baylor University policies require that students, staff, and faculty act in academic matters with utmost honesty and integrity. It is the responsibility of each student to be familiar with the Honor

Code and other university policies and procedures affecting academic integrity. Students are also encouraged to consider these suggestions:

- Review each class syllabus for expectations your professor may have regarding course work and class attendance that go beyond those stated in university policies and guidelines and the Honor Code.
- Be familiar with the importance of academic integrity in class. Understand how citations show respect for other scholars.
- Talk with your professor if you are confused about citation practices or other research standards.
- Make sure you understand not only what counts as plagiarism and cheating, but also how to avoid engaging in these practices. Manage your time, take notes correctly, and use the internet appropriately.
- Make sure you understand your professor's guidelines about working with other students on assignments, receiving assistance from other students on assignments, citing sources, using notes or exams from previous or other classes, and accessing information during an examination. If in doubt – ASK YOUR PROFESSOR!
- Understand that penalties can result from dishonest conduct, ranging from failure of the assignment to immediate expulsion from the university.

For more information see the Baylor University Honor Code on the Academic Integrity Web page or contact the Office of Academic Integrity at 710-8882 or Academic_Integrity@baylor.edu.

Baylor University Title IX:

Sexual and Gender-Based Harassment and Interpersonal Violence Policy

Baylor University does not discriminate on the basis of sex or gender in any of its education or employment programs and activities, and it does not tolerate discrimination or harassment on the basis of sex or gender. This policy prohibits sexual and gender-based harassment, sexual assault, sexual exploitation, stalking, intimate partner violence, and retaliation (collectively referred to as prohibited conduct). For more information on how to report, or to learn more about our policy and process, please visit www.baylor.edu/titleix. You may also contact the Title IX office directly by phone, (254) 710-8454, or email, TitleIX_Coordinator@baylor.edu.

The Title IX office understands the sensitive nature of these situations and can provide information about available on- and off-campus resources, such as counseling and psychological services, medical treatment, academic support, university housing, and other forms of assistance that may be available. Staff members at the office can also explain your rights and procedural options if you contact the Title IX Office. You will not be required to share your experience. **If you or someone you know feels unsafe or may be in imminent danger, please call the Baylor Police Department (254-710-2222) or Waco Police Department (9-1-1) immediately.**

COVID Protocols

Throughout the pandemic, Baylor's commitment has been to the health and safety of our family. Since the spring of 2020, the University has chosen to take actions that align with the most up-to-date health recommendations. Guidelines for the Fall 2021 semester include:

- Everyone is required to wear a mask in classrooms and labs.
- Everyone who is unvaccinated is required to be tested twice weekly throughout the semester. For more information about Baylor's testing program, please visit Baylor's COVID site at www.baylor.edu/coronavirus. To confirm your exemption from this testing, upload your vaccination record to www.baylor.edu/vaccine.
- Vaccinations are available for students at the Baylor Health Center. Please call 254-710-1010 to make an appointment or <https://www.baylor.edu/healthservices/>.
- The symptoms for the Delta variant look very similar to the original COVID symptoms but include headaches, sinus congestion, sore throats, and a runny nose. If you feel sick, please contact the Baylor Health Center to be tested as soon as possible, at 254-710-1010 or <https://www.baylor.edu/healthservices/>.
- Please have a plan in place in case you get sick with COVID or are asked to isolate or quarantine. Baylor will provide limited assistance, but it is in your best interest to have your own plan in place.

We all want to return to a normal fall semester with more in-person events and traditions; vaccinations and face masks help the entire Baylor community to stay healthy.