Class meetings  section 010:  MWF 11:00–11:50  in MCS 110

Instructor  Rob LeGrand
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office location: MCS 205I
office hours: online MTWRF 2:00–4:00 on demand and by appointment


Description  An in-depth study of computer algorithms, including those for hash tables, trees and graphs; analysis of time and space requirements of algorithms; NP-completeness and undecidability of problems.

Prerequisites  CS 2336 (Data Structures and Algorithms) is a prerequisite and MATH 2305 (Discrete Mathematics I) is a co-requisite for this course. Please see me if you haven’t taken CS 2336 or if you’re unsure about your proficiency in data structures and/or discrete math.

Grading breakdown  50% assignments/quizzes/homework
  50% exams (three or four, including final)

Student learning outcomes  After successful completion of this course, students will be able to
  • demonstrate proficiency in analyzing time and space complexity of iterative and recursive algorithms.
  • demonstrate proficiency in programming algorithms for hash tables, trees and graphs.
  • demonstrate an understanding of the theory of NP-completeness.
Class format

Current circumstances require a much different class format than I would prefer. I need to accommodate those students who won’t be coming to campus, so I will use a “flipped classroom” style. I will post everything you need (videos, reading assignments, other materials, announcements, instructions, assignments, quizzes, exams, etc.) online. It is very important that you watch all assigned videos and do all assigned reading before coming to class.

I plan to use face-to-face class meetings only to answer questions and give help; I won’t cover any course material that I don’t also cover online. Because of distancing requirements we won’t have enough room in the classroom for everyone to attend every time, so I’ll need to divide the class into two groups: one that attends only on Mondays and one that attends only on Wednesdays. I will take attendance, and you will need to sit in the same place all semester. Attendance is encouraged but will not directly affect your grade.

Discussion and giving and receiving help are generally encouraged when working on assignments, but all work you turn in must be your own; anything you turn in you must understand thoroughly and be prepared to explain in detail. Whenever you work with anyone but me (including tutors) in any way, you must write fully detailed comments in your code describing the help: who helped, how they helped on which part(s), etc. Failure to do so is considered taking credit for work not done and thus cheating. I will be glad to help you on assignments and concepts when you need it. Exams and quizzes must be completed independently.

Blackboard (blackboard.angelo.edu) will be used to keep track of grades and assignments. You should check Blackboard, the course webpage and your ASU e-mail at least once a day to make sure you’re not missing anything. In particular, your ASU e-mail is the only reliable way I have of contacting you, so please don’t neglect it.

Safety

In compliance with university policy, students in this class are required to wear a mask covering both mouth and nose before, during and after class meetings. Students must also complete the required ASU Wellness Screening each day before coming to class and keep as much distance from other students as is reasonably possible. When entering the classroom, students should use provided disinfecting wipes to clean their desk area. For the safety of everyone, any student not appropriately wearing adequate facial covering will be asked to leave the classroom immediately; the student will be responsible to make up any missed class content or work. Continued noncompliance with university policy may result in disciplinary action through the Office of Student Conduct.

For safety reasons, I will hold office hours online on demand using Blackboard Collaborate. Please take advantage of face-to-face class meetings to ask questions and get help, but when you need help outside of class just get in touch and I’ll do what I can to help.
Computer requirements

You may use PCs in the computer labs, but I recommend that you have your own Windows 10 computer ready to use when you can’t get to a lab. You may need to download and install free software, such as the Respondus LockDown Browser. It is your responsibility to have and use a reliable Internet connection; for best results, use an Ethernet cable to connect to your Internet source instead of relying on Wi-Fi. You will need a webcam to use Blackboard Collaborate for virtual office hours.

Semester schedule

This schedule of topics should be considered approximate and tentative.

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<thead>
<tr>
<th>week of</th>
<th>topic</th>
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<tr>
<td>August 17th</td>
<td>asymptotic analysis</td>
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<tr>
<td>August 24th</td>
<td>asymptotic analysis</td>
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<td>August 31st</td>
<td>recurrence relations</td>
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<td>September 9th</td>
<td>sorting</td>
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<td>September 14th</td>
<td>hash tables</td>
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<td>hash tables</td>
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<td>September 28th</td>
<td>binary search trees</td>
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<td>October 12th</td>
<td>graph algorithms</td>
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<td>November 2nd</td>
<td>NP-completeness</td>
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<td>November 9th</td>
<td>NP-completeness</td>
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<td>November 16th</td>
<td>approximation algorithms</td>
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Final exam

The final exam for this course is scheduled for Monday, November 23rd, 10:30–12:30.

Academic honesty

Angelo State University expects its students to maintain complete honesty and integrity in their academic pursuits. By remaining enrolled in this course you agree not to commit academic misconduct as defined in section I.B.1 of the Student Handbook, available at www.angelo.edu/student-handbook.

Important university policies

- You must contact Student Disability Services in order to request and to implement academic accommodations.
- For ASU’s policy on absences due to religious holy days, see OP 10.19 at www.angelo.edu/opmanual.
- I am obligated to report any knowledge of sexual misconduct to the Title IX office; see www.angelo.edu/services/title-ix for more.

 Modifications

This syllabus, including grade evaluation and course schedule, is subject to modification. In particular, the COVID-19 pandemic may require significant changes in course delivery and content on potentially short notice.