CS 3353: Data Structures and Algorithm Analysis I, Fall 2022
Department of Computer Science
Oklahoma State University

Course Information:

- Instructor: Dr. Cong Pu, Ph.D.
- Office: 216 MSCS
- Office phone: 405-744-6036
- Email: cong.pu@okstate.edu
- Course format: Traditional
- Course meetings: M/W, 4:00 PM - 5:15 PM
  Stillwater Campus | Agricultural Hall | Room 202
- Teaching assistant:
  - Name: Image Bhattarai
  - Email: image.bhattarai@okstate.edu
  - Office location: 116 MSCS
  - Office hours: Tuesday/Thursday, 3:00 PM - 4:30 PM
- Office hours:
  - Tentative office hours: M/W, 3:00 PM - 4:00 PM Or by appointment through email.
- Course web page: Canvas https://canvas.okstate.edu/. It is important to visit Canvas regularly for up-to-date course information.

Course Description: From Catalog

- Storage, structures, data and information structures, list processing, trees and tree processing, graphs and graph processing, searching, and sorting. (PR: CS 2133, CS 3653)

Course Objectives (CO): Students who have completed this course should have:

Course Objective	How students will practice each outcome in this course	How student achievement of each outcome will be assessed in this course
CO-1: Understand basic data structures and abstract data types including stacks, queues, lists, sets, maps and graphs.	• Lecture • Examples • In-class exercise	• Assignment • Review Quiz • Exam
CO-2: Use recursion as a powerful problem solving technique in design and development of data structures and understand when it is not appropriate to use.	• Lecture • Examples • In-class exercise	• Assignment • Review Quiz • Exam
CO-3: Gain an appreciation of the variety, theoretical nature, and practical uses of data structures.	• Lecture • Examples • In-class exercise	• Assignment • Review Quiz • Exam

CO-4: Analyze the efficiency of data structures and select the most appropriate data structure for applications.	• Lecture • Examples • In-class exercise	• Assignment • Review Quiz • Exam
CO-5: Build data structures and use them as building blocks to form more complex and advanced data structures in a hierarchical manner.	• Lecture • Examples • In-class exercise	• Assignment • Review Quiz • Exam

Preferred Communication Method and Expected Response Time:

- Students can always meet with the instructor during the office hours, no appointment is required.
- Outside office hours, 6 hours advance notice is required when scheduling an appointment.
- When you send an email to the instructor, please use OSU email account and use the subject line and include a course number, e.g., CS3353.
- Students can generally expect an email response within 12 hours. If students do not get a response within 12 hours, please forward the previous email to the instructor.
- Students can generally expect the feedback on assignment and exam in one week after submission. If students do not receive the feedback in two weeks, please send an email to the instructor.

Required Textbooks, Additional Reading, and Other Materials:

- Data Structures and Algorithms in Java, M. T. Goodrich, R. Tamassia and M. H. Goldwasser, Sixth Edition, Wiley. ISBN: 978-1-118-77133-4.
- Data Structures and Algorithms in C++, Adam Drozdek, 4th Edition. Cengage Learning, 2013, ISBN 13: 9781133608424.
- Important concepts/materials will be included in the lecture notes from various sources, and posted on Canvas https://canvas.okstate.edu/.

Course Requirements and Grading Policy:

- **1st Exam: 15%**, Sep 26 (Monday), 4:00 p.m. - 5:15 p.m., Canvas, Stillwater Campus | Agricultural Hall | Room 202
- **2nd Exam: 15%**, Oct 26 (Wednesday), 4:00 p.m.- 5:15 p.m., Canvas, Stillwater Campus | Agricultural Hall | Room 202
- **3rd Exam: 15%**, Dec 12 (Monday), 6:00 p.m. – 7:50 p.m., Canvas, Stillwater Campus | Agricultural Hall | Room 202
    - All exams (non-cumulative) are computer-based exams.
    - All exams should be taken in the classroom (Stillwater Campus | Agricultural Hall | Room 202). However, students can start the exam whenever students want during the exam time and submit on Canvas https://canvas.okstate.edu/.
    - Students are allowed to bring notes on ONE piece of double-sided A4 paper.
        - Other resources and Internet are not allowed.
    - There will be NO make-up for missing exam. Only university excused absences with appropriate and official DOCUMENTATION will be accepted for make-up exam.
        - The make-up exam must be taken within two days after the scheduled

exam.
    - If students take a conflict exam, they must talk to the instructor and provide a valid document at least two weeks before the scheduled exam.
        - The conflict exam must be taken within two days after the scheduled exam.
- **Assignment: 55%**
    - Assignment should be SUBMITTED on Canvas https://canvas.okstate.edu/ before Due Date. *Other submission methods* (i.e., email) *will NOT be accepted.*
    - LATE Submission will NOT Be Accepted on Canvas https://canvas.okstate.edu/ since the submission link will be closed automatically after due date.
    - There will be NO re-submission for missing assignment. Only university excused absences with appropriate and official DOCUMENTATION (covering half of assignment time) will be accepted for assignment re-submission.
    - Each student has unlimited submission attempts on Canvas https://canvas.okstate.edu/ before due date. However, the TA/instructor only grades the final submission attempt.
    - There will be NO re-submission if the student submitted the wrong assignment. So, please verify the uploaded assignment after the submission.
- **Review Quiz: 5% (Bonus)**
    - Review quiz will **NOT** be announced in advance, so **attendance is highly REQUIRED**.
    - There will be **NO** make-up for missing review quiz due to absence, lateness, etc.. Only university excused absences with appropriate and official **DOCUMENTATION** will be accepted for make-up review quiz.
- Plagiarism:
    - Plagiarism or cheating will not be tolerated in the class.
        - 1st plagiarism will result in zero point in the suspected work.
        - 2nd plagiarism will result in immediate dismissal (F grade).
- All grades will be posted on Canvas https://canvas.okstate.edu/:
    - *Students are highly suggested to check the grade on* Canvas https://canvas.okstate.edu/ *frequently and notify instructor immediately if there is any grading error*.
    - Mid-term grade will be posted by Wednesday, October 5, 2022
        - Friday, November 11, 2022, last day to drop an individual course.
        - Fall 2022 calendar: https://registrar.okstate.edu/academic_calendar/
- Grade Scale:
    - Actual points received in each category should be converted into category percentage. For example, if you got 40/50 for 5 assignments, the percentage of assignment category will be (40 / 50) * 55% = 44%.
    - A (100 - 90), B (89 - 80), C (79 - 70), D (69 - 60), and F (59 - 0)
- Excuses
    - Because there is a degree of flexibility in completing items, it is the student's responsibility to keep track of dates and find enough time for completion. If the students wait until the last minute, there is no one to blame but the students themselves. With that said, the instructor is also not heartless. If there is something that occurs which prevents student's access to the course for a significant length of time (e.g., serious illness, death in the family, or personal

tragedy), the student needs to contact the instructor as soon as possible and they may be able to work something out.

Attendance Policy:

- The instructor chooses not to take attendance. However, students are expected to attend all class meetings punctually, from the beginning until the end of the semester.
- If a student misses a class without university excused absence documentation, the student should not expect individualized instruction on what was missed. This will be effective from the beginning of semester.

Civility in the Classroom Statement:

- Oklahoma State University is a community of faculty, students, and staff that enjoys an expectation of cooperation, professionalism, and civility during the conduct of all forms of university business, including the conduct of student–student and student–faculty interactions in and out of the classroom. Further, the classroom is a setting in which an exchange of ideas and creative thinking should be encouraged and where intellectual growth and development are fostered. Students who disrupt this classroom mission by rude, sarcastic, threatening, abusive or obscene language and/or behavior will be subject to appropriate sanctions according to university policy. Likewise, faculty members are expected to maintain the highest standards of professionalism in all interactions with all constituents of the university.
    - To ensure that you are fully engaged in class discussions during class time, you are expected to do the following:
        - Maintain the level of civility and professionalism expected in a face-to-face classroom setting.
        - Refrain from engaging in non-class related activities during class time that create a distraction for other students in the class and/or limit your ability to engage in the course.
- Failure to meet these expectations may result in the following consequences:
    - Being counted as absent for the class meeting.
    - Not receiving credit for class participation for that class period.
    - Other consequences as stipulated in the syllabus, Oklahoma State University The Student Code of Conduct, or other university policy.

Student with Disabilities:

- Any student who, because of a disability, may require special arrangements in order to meet the course requirements should contact the instructor as soon as possible to make any necessary arrangements. Students should present appropriate verification from Student Accessibility Services https://accessibility.okstate.edu/ during the instructor's office hours. Please note instructors are not allowed to provide classroom accommodations to a student until appropriate verification from Student Accessibility Services has been provided. For additional information, you may contact the Student Accessibility Services office in 155 UHS or 405-744-7116 / accessibility@okstate.edu.

Academic Integrity Statement:

- Oklahoma State University is committed to the maintenance of the highest standards of integrity and ethical conduct of its members. This level of ethical behavior and integrity

will be maintained in this course. Participating in a behavior that violates academic integrity (e.g., unauthorized collaboration, plagiarism, multiple submissions, cheating on examinations, fabricating information, helping another person cheat, unauthorized advance access to examinations, altering or destroying the work of others, and fraudulently altering academic records) will result in your being sanctioned. Violations may subject you to disciplinary action including the following: receiving a failing grade on an assignment, examination or course, receiving a notation of a violation of academic integrity on your transcript, and being suspended or dismissed from the University. Oklahoma State University's Academic Integrity policy identifies behaviors that violate the fundamental values of academic integrity. Please refer to https://academicaffairs.okstate.edu/academic-integrity/academic-integrity.html for more information.

Discrimination, Harassment, and Sexual Violence Statement:

- Oklahoma State University is committed to providing and strengthening an educational, working, and living environment where students, faculty, staff, and visitors are free from gender and/or sex discrimination of any kind. Sexual assault, discrimination, harassment, and other Title IX violations are not tolerated by the University. Report any incidents to the Office of Equal Opportunity Services, 405.744.1156 or file a report online at https://hr.okstate.edu/equal-opportunity/title-ix-process.html.

LGBTQIA Support Statement:

- I identify as an ally to the lesbian, gay, bisexual, transgender, queer, intersex, and asexual (LGBTQIA) community, and I am available to listen and support you in an affirming manner. I can assist in connecting you with resources on campus to address problems you may face pertaining to sexual orientation and/or gender identity that could interfere with your success at Oklahoma State University. Additional resources are available through the Division of Institutional Diversity, https://diversity.okstate.edu/departments/equal/resources.html.

COVID-19 Related Information: From University

- Protocols for a positive case in class
    - During the fall semester, instructors will still have the same three options should there be a positive case reported in class and can temporarily shift the delivery mode. For up to two weeks, instructors must choose from among the following options:
        - Move the course online
        - Teach in a hybrid format (part online/part in-class) to ensure social distancing and reduce further exposure. For students and instructors attending a face-to-face class, masks will be required for the duration of the two weeks.
        - Continue the course face-to-face with masks required of all students and instructors attending. If there is a new positive case in a class while the class is meeting fully in-person or in a hybrid format, the two-week period restarts if the person who tested positive has been attending in-person.
    - If there is a new positive case while the class is meeting online, the two-week window will not restart since there were no additional potential exposures in class.

Course Schedule and Important Dates: Topics and/or dates may be changed during the semester at the instructor's discretion because of scheduling issues, developments in the discipline, or other contingencies.

- Aug 22: Welcome & Course Introduction & Programming Review
- Aug 24: Complexity Analysis
- Aug 29: Linked List
- Aug 31: Linked List
- **Sep 05: University Holiday**
- Sep 07: Linked List
- Sep 12: Linked List
  Release Assignment 1: Linked List
- Sep 14: In-Class Lab
- Sep 19: Stacks and Queues
- Sep 21: Stacks and Queues
  Assignment 1 Due
- **Sep 26: 1st Exam**
  Release Assignment 2: Stacks and Queues
- Sep 28: 1st Exam Discussion
- Oct 03: Recursion
- Oct 05: Recursion
  Assignment 2 Due
- Oct 10: Binary Trees
  Release Assignment 3: Recursion
- Oct 12: Binary Trees
- Oct 17: Binary Trees
- Oct 19**:** Binary Trees
  Assignment 3 Due
- Oct 24: Multiway Trees
- **Oct 26: 2nd Exam**
- Oct 31: 2nd Exam Discussion
  Release Assignment 4: Binary Trees
- Nov 02: In-Class Lab
- Nov 07: Graphs
- Nov 09: Graphs
  Assignment 4 Due
- Nov 14: Graphs
- Nov 16: Graphs
- **Nov 21: Students' Fall Break (No Classes)**
- **Nov 23: Students' Fall Break (No Classes)**
- Nov 28**:** Sorting
  Release Assignment 5: Graphs
- Nov 30**:** Sorting
- Dec 05: Hashing
- Dec 07: Hashing
  Assignment 5 Due
- **Dec 12: 3rd Exam**