CS PRELIMINARY EXAM STUDY GUIDE

July 2024 Update

Topics/Sections

The exam currently has 4 sections. These sections are:

- Computer Architecture and Operating Systems
- Data Structures and Programming Languages
- Programming Proficiency
- Theoretical Foundations

Some Logistics

The exam typically is a two day exam, with the days separated by one week in time. While the specifics of each exam's logistics can vary, one recent exam started about 8:15 in the morning and ended at 4:30 in the afternoon on one Friday and again on the following Friday. On that exam, there was about a two hour gap between the two sessions. Typically, in each day, one section is tested in the morning, and one other section is tested in the afternoon.

The Graduate Records Coordinator in the CS Department should be contacted to register for the exam as well as to find current information about scheduling and sequencing. All schedules are subject to change, however, due to resource considerations.

Study Material

The items that follow are syllabi for UAH courses that cover material for the preliminary exam. Some syllabi are somewhat sparse as they serve mostly as pointers to readings and topics that students need to attack. Additionally, these syllabi are not meant to include all possible items that could be tested on the preliminary exam. Instead, these syllabi should be viewed as pointers to topic areas that definitely should be studied in preparation for the preliminary exam.

(CS 309-01) (FA23) COMPUTER ORG & SWTCHNG TH RY

Jump to Today ✎ Edit

Important University Information

This is a summary of the information found in Module: M00 Week zero (https://uah.instructure.com/courses/69808/modules/246494)

Course Information

Contact

Instructor: Mr. Kevin Preston

Office: OKT N348

Email Address: rkp0001@uah.edu

Phone Number: 256-824-6347

Availability/Office Hours:

Professor Preston Office Schedule
Fall 2023

Time\Day	Monday	Tuesday	Wednesday	Thursday
7:00 – 8:00 AM				
8:00 – 9:20 AM				
9:40 -11:00 AM		Office		Office
11:20 – 12:40 PM	Office	CS309-01 N155	Office	CS309-01 N155
1:00 – 2:20 PM	CS499-01 N306	CS413-01 N327	CS499-01 N306	CS413-01 N327
2:40 – 4:00 PM	*<Office>*	*<Office>*	*<Office>*	*<Office>*
4:20 – 5:40 PM	CS650-01 N324		CS650-01 N324	
6:00 – 7:20 PM				
7:20 – 9:00 PM				

Office – Scheduled office time. I should be in my office during these times.

<Office> - Only if requested in advance. Any other times when requested by students.

When my office door is closed, I am not in the office. If it is during office hours, please wait I should be back shortly or look for me in the CS Department Office (N300) or Hardware Lab (S303).

Students should contract me via Canvas email or email me directly at rkp0001@uah.edu. During normal class days/hours (Monday - Thursday, 6:00 AM to 4:00 PM) expect a response from me within 2 hours. Outside of normal business hours a response should not be expected until the next class day.

Lab GTAs

Abhishek Srinivas Sunkara as0468@uah.edu (mailto:as0468@uah.edu)	Sai Vardhan Bonepalli sb0293@uah.edu (mailto:sb0293@uah.edu)

Grader

Nikhil Sai Dommaraju nd0052@uah.edu (mailto:nd0052@uah.edu)

Details

Course Name: CS309 Computer Organization and Switching Theory

Mode of Delivery: In person lecture

Credit Hours: 3

Semester/Year: Fall 2023
Meeting day, time and location: Tuesday, Thursday 11:20 AM to 12:40 PM OKT N155

Prerequisites: CS121 (Links to an external site.) (http://catalog.uah.edu/search/?P=CS%20121)

Prerequisite with concurrency: CS 214 (Links to an external site.) (http://catalog.uah.edu/search/?P=CS%20214)

Course Description:

Boolean algebra, Boolean function minimization techniques, design and analysis of combinational circuits, design and analysis of sequential circuits. Computer hardware organization, including CPU, instruction representation and executive. Programing in a representative assembly language, including floating point programming. Overview of software systems: loaders, assembler, compiler, interpreters, operating systems. A lab section must be scheduled for this course.

Objectives

- To learn the basic building blocks of computers and how they are used to implement modern Central Processing Units (CPUs).
- To learn the computer's internal representation of numbers, characters, and assembly programs.
- To learn how to write basic ARM Assembly Language programs for the Raspberry Pi and the relationship of these instructions to the hardware that implements them.

Materials

Required Textbook

Computer Organization and Architecture Themes and Variations © 2014 by Alan Clements. Note this text is also used for CS413. Almost all of Chapter 1 is available on Amazon.com under the Preview option.

Software Requirements

You need an account to use the CS department computers in the hardware lab. Apply online at http://www.cs.uah.edu/account/

Course Outcomes

Course outcomes describe what students are expected to know and be able to do by the time of graduation. They relate to the knowledge, skills, and behaviors that students acquire as they progress through the program.

ABET outcomes include:

- Apply computer science theory and software development fundamentals to produce computing-based solutions.

Grading Policies

See the Assignments for the weighting of each assignment group. I use a traditional grading scale: A (90% and above), B (80 and above), C (70 and above), D (60 and above) and F (less than 60).

My request to the Grading Pool Coordinator is to return all graded work within one week of the due date.

Late work

Labs must be completed in the week they are due. Only the course instructor can approve any late lab submissions and this request has to be obtained prior to the lab due date. Typically, late labs will receive a 15% deduction and must be completed no later than one week past the original due date.

None of the assignments in Canvas under the "In process skill check" Group can be completed for late credit.

If you will miss a test you must notify me in advance with a valid excuse in order to be allowed to make up the test.

Students not seeing an assignment due date in Canvas will NOT be accepted as a valid excuse.

Important Dates

See the assignments link for due dates. These are subject to change. Students should check Canvas several times per week for changed dates.

General Policies for All of My Courses

Please review the Computer Science department policies here: **UAH CS Department Policies** (https://www.uah.edu/science/departments/computer-science/cs-resources/cs-policies)

This course will use UAH's learning management system, Canvas, as well as other technology tools. Students will be expected to have access to a computer with internet capabilities in order to fully participate in this course.

Attendance Policy

When you miss class, you miss important information. If you are absent, you are responsible for learning material covered in class. If you are absent when an assignment is due, you must have submitted the assignment prior to the due date to receive credit. Please contact your instructor if you have specific questions or concerns.

Communication and Instructional Continuity

In this class, the official mode of communication is through [Canvas/UAH email]. Students can expect a response from the instructor within a [24/48 hour] timeframe.

In the event a regular scheduled course is unexpectedly interrupted, course requirements, due dates, and grading policy are subject to change when necessitated by revised course delivery, semester calendar, or other instances. Information about changes in this course can be obtained from the Canvas course webpage or by contacting me. If I do not respond within [24/48 hours], please contact my department at cschair@uah.edu or the college dean at science.dean@uah.edu.

If our regular scheduled class meeting is interrupted or the campus should unexpectedly close, students should immediately log onto Canvas and read any course announcements. Students are encouraged to continue the readings and other assignments as outlined on the course syllabus until otherwise advised. Any student who does not could fall behind in the course.

Course Conduct

All students must treat others with civility and respect and conduct themselves in a way that does not unreasonably interfere with the opportunity of other students to learn. All communication between student/instructor and between student/student should be respectful and professional.

Plagiarism and Academic Honesty

Your written assignments and examinations must be your own work. Academic misconduct will not be tolerated. Examples of unacceptable behavior include plagiarism/use of prior work/use of Chegg, ChatGPT and other online problem-solving sites or AI's. To ensure that you are aware of what is

considered academic misconduct, you should review carefully the definitions and examples provided in the Student Handbook. If you have questions in this regard, please contact me without delay.

In an academic setting it is critical that students turn in material that is their own work. In class tests and quizzes are closed book and only material provided by the instructor may be used by the students on the exam. Out of class assignments (i.e., Programming assignments) are also expected to be the student's own work. Outside help on these assignments are limited to your instructor and the Student Success Center https://www.uah.edu/ssc/tutoring. Getting help from websites such as chegg.com, tutor.com, etc. is strictly prohibited. Students violating this policy will receive a zero on the assignment and be reported per **UAH Policy 02.01.67** (https://www.uah.edu/images/administrative/policies/02.01.67-aa-academic-misconduct-policy.pdf). Repeated violations by the student may result in a failing grade for the course.

Discussion of Concerns

If you have difficulties or concerns related to this course, your first action should be to discuss them with your instructor. If such a discussion would be uncomfortable for you or fails to resolve your difficulties, you should contact the Computer Science Department Chairperson, Dr. Letha Etzkorn at cschair@uah.edu. If you are still unsatisfied, you should contact Dr. Terri Johnson, Assistant Dean of the College of Science, at **science.adean@uah.edu** (mailto:science.adean@uah.edu).

Class Schedule

The overall class schedule is given in the Modules section of Canvas. Each module represents what material and assignments are planned for during the week. Assignment due dates are given in the Assignments section of Canvas. In general, on-line assignments (quizzes, file uploads, etc.) will be due on Sunday one minute before midnight. If you do not see an assignment due on Sunday check Canvas again!

The class schedule is subject to change at any time. Students are to make sure to check Canvas on a regular basis of assignment due dates. If due dates are changed in Canvas, you should receive a notification from Canvas on the new date.

University Information

Disability Statement

The University of Alabama in Huntsville will make reasonable accommodations for students with documented disabilities. If you need support or assistance because of a disability, you may be eligible for academic accommodations. Students should contact the **Disability Support Services** (https://www.uah.edu/dss) Office (256.824.1997 or Wilson Hall 128) as soon as possible to coordinate accommodations.

Pertinent UAH Policies

- **UAH Student Handbook** (https://www.uah.edu/dos/office-of-student-ethics-education/handbook)
- **Academic Misconduct Policy** (https://www.uah.edu/policies/02-01-67-academic-misconduct-policy)
- **Complete listing of UAH Policies and Procedures** (https://www.uah.edu/policies)

Campus Resources

The University of Alabama in Huntsville offers a range of student services to enhance the experience of students.

- **Academic Support Services** (https://catalog.uah.edu/undergrad/support-services/academic-support-services/) —ASAP, Student Success Center, Tutoring, PASS, Academic Support Centers by College
- **Student Support Services** (https://catalog.uah.edu/undergrad/support-services/student-support-services/) —Counseling Center, Disability Support Services, Student Health Services, Office of International Services, Multicultural Affairs, etc.
- **UAlert** (https://www.uah.edu/ualert) —Sign up for UAH's emergency notification system to receive urgent messages from the university
- **Registrar's Office** (https://www.uah.edu/registrar) —Academic Calendars, Course Registration, Student Records, Commencement
- **Louis Salmon Library** (https://www.uah.edu/library) —Printed and Online Resources, Reference Services, Group Study Rooms, AV Resources, Printing
- **Office of Diversity, Equity, and Inclusion** (https://www.uah.edu/diversity) —Anti-racism resources, LGBTQ resources, lactation rooms, name change requests, internet access assistance, Title IX
- **Canvas Support** (https://community.canvaslms.com/t5/Student-Guide/How-do-I-get-help-with-Canvas-as-a-student/ta-p/498) —Call 844-219-5802 to report an issue with Canvas.
- **OIT Help Desk** (https://www.uah.edu/oit/contact) —For technical support, contact the OIT Help Desk (**helpdesk@uah.edu** (mailto:helpdesk@uah.edu) ; 256.824.3333)

NOTE: When submitting a support ticket include your name, your class, the element/assignment being affected, and a detailed description of the issue. Providing a **screenshot** (http://www.take-a-screenshot.org/) is often very helpful in diagnosing an issue.

Important Dates

Review the semester dates and deadlines and the academic calendar. (https://www.uah.edu/registrar/calendars)

Subject to Change

Every effort is made to follow the guidelines in the syllabus; however, if needed, the syllabus will be amended. You will be notified if changes are made.

Course Summary:

Date	Details	Due
Sun Aug 20, 2023	Q01 Chapter 1 Terms (https://uah.instructure.com/courses/69808/assignments/779224)	due by 11:59pm
Sun Aug 27, 2023	Q02 Register Transfer Language (RTL) (https://uah.instructure.com/courses/69808/assignments/779226)	due by 11:59pm
Sun Sep 3, 2023	Chapter 1 (https://uah.instructure.com/courses/69808/assignments/779250)	due by 11:59pm
	Q03 Circuit Analysis and Design 2.9.3 (https://uah.instructure.com/courses/69808/assignments/779232)	due by 11:59pm
Sun Sep 10, 2023	Q04 Signs and Complements (https://uah.instructure.com/courses/69808/assignments/779229)	due by 11:59pm
Mon Sep 11, 2023	Lab 1 (https://uah.instructure.com/courses/69808/assignments/779238)	due by 6am
	Lab Sign-ups 309-01 (https://uah.instructure.com/appointment_groups/596)	9:40am to Sep 14 at 9pm

Date	Details	Due
Sun Sep 24, 2023	ARM Hello World (ARM1) (https://uah.instructure.com/courses/69808/assignments/779234)	due by 11:59pm
Mon Sep 25, 2023	Lab 2 (https://uah.instructure.com/courses/69808/assignments/779239)	due by 6am
Thu Sep 28, 2023	Chapter 2 (https://uah.instructure.com/courses/69808/assignments/779243)	due by 11:20am
Sun Oct 1, 2023	ARM Get Inputs (ARM2) (https://uah.instructure.com/courses/69808/assignments/779233)	due by 11:59pm
Sun Oct 8, 2023	ARM Simple branching (ARM3) (https://uah.instructure.com/courses/69808/assignments/779235)	due by 11:59pm
Mon Oct 9, 2023	Lab 3 (https://uah.instructure.com/courses/69808/assignments/779240)	due by 6am
Sun Oct 15, 2023	Q05 Setting CCR Flags (https://uah.instructure.com/courses/69808/assignments/779230)	due by 11:59pm
Mon Oct 23, 2023	Lab 4 (https://uah.instructure.com/courses/69808/assignments/779241)	due by 11:59pm
Sun Oct 29, 2023	Q06 Chapter 3 ARM Execution (https://uah.instructure.com/courses/69808/assignments/779225)	due by 11:59pm
	Q07 Chapter 3 ARM RTL and Assembler Directives (https://uah.instructure.com/courses/69808/assignments/779227)	due by 11:59pm
Sun Nov 5, 2023	Q08 Chapter 3 More on ARM Instructions (https://uah.instructure.com/courses/69808/assignments/779231)	due by 11:59pm
Mon Nov 6, 2023	Lab 5 (https://uah.instructure.com/courses/69808/assignments/779242)	due by 11:59pm
Tue Nov 28, 2023	Final Exam - Long answer (https://uah.instructure.com/courses/69808/assignments/781946)	due by 11:20am

Date	Details	Due
Tue Dec 5, 2023	Final Exam - Short Answer (https://uah.instructure.com/courses/69808/assignments/779237)	due by 11:30am

Syllabus **CS 413 (Sect. 1) Intro. to Digital Computer Architecture** Fall 2018

Class Lecture Meeting Times: MW 11:20 am - 12:40 pm (in OKT S 104).

Instructor of Record: Dr. Tim Newman
email: tnewman@cs.uah.edu
Office: OKT N 364
Phone: 824-6619

Office Hours: MW 1:15-2:00pm
TR 10:15-11:15am
T 2:00-3:00pm

Prerequisite: CS (308 and) 309

Course Overall Aim: Examine the design of computer systems and subsystems, including register transfer, bus structure, timing and control. Focus includes pipelining, memory systems (including cache and cache coherence) and arithmetic and I/O units. Interrupt handling is also considered.

Supporting Aims: Achieve understanding of computer organization and architecture, enabling or furthering ability to analyze a problem and identify and define the computing requirements appropriate to its solution.

Students are also to be able to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.

Lastly, students are to be able to recognize the need for, and have the ability to engage in, continued professional development.

Topics Addressed:

- Instruction Set Architectures - ARM; Data Access
- The Laws - Moore, Amdahl
- Performance Measurement
- Data Path, esp. RISC Register-Register Data Path
- Pipelining and Basic Instruction-Level Parallelism
- The Stores - Cache, Main Memory, Secondary Storage
- Processor-Level Parallelism

Text: *Computer Organization and Architecture: Themes and Variations* by A. Clements, 2014.

Grading: The final grade will be composed of the following weights. The instructor reserves the right to make changes to this system. Any changes will be announced in class.

Activity	**Total Points**
Mid-term Exams (2)	200 pts. total
Final Exam	130 pts.
Labs	100 pts.
Homeworks	20 pts. total
Participation	30 pts.
Grand Total	480 pts.

The grading scale will be **no stricter than**:

At/Above 433 pts.	for a 4.0;	At/Above 385 pts.	for a 3.0;
At/Above 337 pts.	for a 2.0;	Above 317 pts. (>**66%**)	for a 1.0;
< 317	for a 0.0		

This course will utilize the plus/minus grading system for final grades. Note that a plus or minus grade doesn't affect GPA (e.g., a B- is counted in GPA the same as a B or B+).

Exams: There will be two mid-term examinations, each worth 100 points. These exams are scheduled for **Wed., Sept. 12** and **Mon., Oct. 22**. The 130 point comprehensive final is at the time the University specifies, which is currently being listed as **Mon., Dec. 3**, from 8:00 am to 10:30 am. Tests will cover lectures, assigned readings, homework, and lab assignments. Documented crisis or one week's prior notice required for *consideration* of exam make-up.

Lab Assignments: The lab director will produce a lab schedule and the lab assignments for this course, likely with no fewer than 4 and no more than 6 lab sessions. Labs are determined by and graded according to the lab director's standards. The instructor of record is not the lab director. Lab assignments will be completed in the Hardware Lab, which is Tech Hall S303. More detail will be provided about the lab assignments later.

Homeworks: Some homeworks will be assigned. One could be due in the last two weeks of class. Homeworks are due at the start of class on the due date. No late homeworks are accepted. Homeworks are to be done on your own. However, it is allowable to utilize the Help Desk TA's guidance on homeworks.

Pop Quizzes: The instructor reserves the right to have a pop quiz. If there is a pop quiz, lecture, assigned readings, homework assignment topics, etc., are all fair game. If there are any pop quizzes, there will be a change to the total number of points possible in the course, and you will be notified of that at a class session.

Attendance and Absence: Class attendance and effective, constructive participation is important to your performance in the course and **makes up a portion of the grade**. The 30 participation points are based on the instructor's assessment of the **effectiveness and constructiveness** of your class participation, with that assessment made at the end of the course (i.e., after the final exam session). Also note the exam absence policy mentioned earlier.

If you need help: I have scheduled a liberal amount of office hours and I want to help you learn the material and to succeed in the course. Please seek my assistance if you have any questions or concerns. The lab assistants in the Hardware Lab are also ready to help you with any difficulties you have on the assignments.

Academic Honesty: The University policy on academic honesty, discussed in the code of Student Conduct, is strict. The instructor's academic honesty policy is very strict; instances of academic dishonesty will be penalized, at least by failure on the item and usually by failure of the course (in addition to any University penalties). **Unless otherwise stated, all work is to be individual work.** Getting all or part of a homework or lab answer or program from a blog, forum, web answer sheet, library book, a friend, or any other source consitutes academic dishonesty; they are all example violations of the instructor's academic honest policy. So: **DO YOUR OWN WORK IN THIS COURSE.**

UAlert Emergency Notification System: UAHuntsville has implemented the UAlert emergency notification system. UAlert allows you to receive time-sensitive emergency messages in the form of e-mail, voice mail, and text messages.

Everyone who has a UAHuntsville e-mail address will receive emergency alerts to their campus e-mail address. In order to also receive text and voice message alerts, you are asked to provide up-to-date phone contact information. Participation in UAlert text and voice messaging is optional, but enrollment is strongly encouraged. You can't be reached through UAlert unless you participate. The information you supply is considered confidential and will not be shared or used for purposes other than emergency notification.

To review your UAlert account, add or update phone and alternate e-mail addresses, and set the priority for your contact methods, please visit the UAlert web site: http://ualert.uah.edu.

Class Policies Note: Please also see the Department's Course Policy Sheet.

Fall 2018 CS 413 (01) MW 11:20 Class Tentative Schedule

Date		Topic	Reading Assignment	Special Comments
Week One:	8/15	Intro.	Ch. 3	
Week Two:	8/20 - 8/22	ISA I: ARM	Ch. 3	
Week Three:	8/27 - 8/29	ISA I: ARM (cont'd); ISA II: Data Access	Chs. 3 + 4	
Week Four:	9/3	No Class	Review Ch. 3	
	9/5	ISA II: Data Access, RISC	Ch. 4	
Week Five:	9/10	ISA II: Data Access, RISC (cont'd)	Ch. 4	
	9/12	**TEST 1**	Chs. 3 + 4	**TEST 1**
Week Six:	9/17	ISA II: Data Access, RISC (cont'd)	Ch. 4	
	9/19	Comp. Technology - Moore's Law	Ch. 6.1	
Week Seven:	9/24	Moore's + Amdahl's Laws, Perf. Metrics	Ch. 6	
	9/26	Amdahl's Law, Perf. Metrics	Ch. 6	
Week Eight:	10/1 - 10/3	Perf. Metrics, Data Path, Proc. Control	Chs. 6 + 7	
Week Nine:	10/8 - 10/10	Data Path (cont'd), ILP: Pipelining	Ch. 7	
Week Ten:	10/15 - 10/17	ILP: Pipelining (cont'd)	Ch. 7	
Week Eleven:	10/22	**TEST 2**	Chs. 4.6, 4.7, 6 + 7	**TEST 2**
	10/24	Cache	Ch. 9	
Week Twelve:	10/29 - 10/31	Cache (cont'd), Main Memory	Chs. 9 + 10	
Week Thirteen:	11/5 - 11/7	Main Memory (cont'd), Storage	Chs. 10 + 11	
Week Fourteen:	11/12	Storage (cont'd)	Ch. 11	
	11/14	I/O	Ch. 12	
Week Fifteen:	11/19	I/O (cont'd), Parallelism	Chs. 12 + 13	
	11/21	No Class	Thanksgiving	
Week Sixteen:	11/26	Parallelism (cont'd) + Review	Ch. 13	
	11/28	No Class	Study all chaps.	Study Day
FINAL :	12/3	**FINAL**	Study all chaps.	**FINAL**

CS490-01: Intro to Operating Systems

Course Information

Contact

Instructor: Beth Allen
Office: OKT N300G
Email Address: beth.allen@uah.edu
Phone Numbers: 256-824-5320
Availability/Office Hours: http://www.cs.uah.edu/~mea0010/

Details

Course Name: CS490 Intro to Operating Systems
Mode of Delivery: Traditional
Credit Hours: 3
Semester/Year: Fall 2024
Meeting day, time, and location: MW 9:40-11:00am, OKT N324
Prerequisites: CS 413

Overview

Description: History and principles of operating systems. Emphasis on the fundamental concepts of process management, memory management, I/O management, and file systems. Topics include process states, threads, CPU scheduling, concurrent processing, virtual memory, disk scheduling. Brief overview of modern operating systems including multiprocessor, distributed, and real time systems. Contemporary operating systems such as UNIX, and Windows will be used as examples. Students will be assigned substantial programming projects.

Objectives

Upon completion of this course, the student will:

- Have a basic understanding of the fundamental principles of operating system design and know something about how they are implemented in real-world systems such as Windows, UNIX, Linux, Android and/or other modern operating systems.
- Be able to analyze systems and understand how to evaluate various design tradeoffs
- Have some practical experience in the implementation of operating system theory so that the tradeoffs between theory and practice can be better understood.
- Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions (ABET Outcome #1).

Topics

- Evolution of operating systems from simple batch to modern multiprogramming and timeshare systems
- Types of kernels, monolithic, microkernel
- Concept of process, process control block, process image, process state, and state transitions
- System calls, traps, interrupts and context switching
- Threads, kernel threads vs user threads
- Concurrency, mutual exclusion, synchronization and race conditions
- Deadlock, starvation, deadlock avoidance, deadlock prevention, deadlock detection
- Common synchronization problems including producer/consumer, readers/writers, and dining philosophers
- Basic memory management, partitioning and paging
- Virtual memory management, page replacement algorithms
- Uniprocessor scheduling algorithms, to include Round-Robin, FIFO, Multi-level feedback queue and others
- Measuring throughput, response time, turnaround time
- Extending scheduling to multiprocessor systems
- Introduction to scheduling on real-time systems
- I/O management and disk scheduling algorithms, intro to RAID (optional topic, if time)
- File management, directories, and file storage allocation
- Virtual machines, introduction, hypervisors (optional topic if time)
- Security topics, avoiding breaches, protecting data, detecting breaches, recovery mechanisms

Materials

Required

- Operating Systems: Internals and Design Principles, 9th Edition, By William Stallings. You are not required to purchase any additional online access codes.

Technology Statement

Software Requirements

You need an account to use the CS department computers. Apply online at http://www.cs.uah.edu/account/

Projects in this course may use C, C# and/or Rust programming languages. All environments are available free of charge and instructions will be provided with assignments.

This course will use UAH's learning management system, Canvas, as well as other technology tools. Students must have access to a computer with internet capabilities in order to fully participate in this course.

Evaluation and Grading

The following grading scheme will apply in this course:

A = 90% – 100%
B = 80% up to < 90%
C = 70% up to < 80%
D = 60% up to < 70%
F = 0% up to < 60%

Evaluation and grading will be based upon weighted assignment groups. I strive to grade assignments within one week of submission, but there may be a few limitations based on grading assistant availability. If you have concerns about a graded assignment, you must address it with me within one week after grades are posted for that assignment.

Assignment Types You'll See in this Class	What to Expect	%
Programming Projects and Homework	Two to three programming projects related to topics in this course will be assigned during the term. There may be other short written assignments.	20%
Tests	There are two closed-book, closed-notes tests during the semester. See the schedule for timeframe and approximate topics.	50%
Final Exam	The Final Exam will be a comprehensive final and will cover all of the topics and materials in this course. You will be expected to recall information without access to your notes.	30%

Missed Assignments/Make-Ups/Extra Credit

I do not accept late work in 400 level and above CS courses, unless there is an unavoidable extenuating circumstance that necessitates extra time. This may include an illness, other than minor situations, an accident, a family emergency. Documentation may be required to obtain makeup time. Personal vacations are not a valid excuse. If you will miss a test or a test deadline, you must notify me in advance with a valid excuse, to be allowed to make up the test. If a makeup test must be given, it may be a different exam than the original test.

Make regular backup copies of your work. Losing or corrupting your files is not an excuse for missing an assignment deadline.

Attendance Policy

When you miss class, you miss important information. If you are absent, you are responsible for learning material covered in class. If you are absent when an assignment is due, you must have submitted the assignment prior to the due date to receive credit. Please contact your instructor if you have specific questions or concerns.

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Whether we are using Canvas discussions or informal group communications tools, I expect you to adhere to my guidelines for Netiquette in online forums:
www.cs.uah.edu/~mea0010/netiquette.html

Academic Honesty

Academic Integrity is of utmost importance to me and any professional I work with. Therefore, I do not tolerate academic dishonesty in my courses. Academic dishonesty can be defined as receiving (or providing) unauthorized assistance on any graded assignment, program, quiz or test. This includes, but is not limited to, working with another person on a programming assignment, copying test answers from other papers, attempting to use electronic media of any sort during a closed exam, copying work from outside sources such as websites, books, etc. Copying code is a form of plagiarism.

ChatGPT and other online generative assistance can be useful tools, but, using them to write programs for you is also cheating. It is okay to use these tools for help with simple questions about the language or topic you are learning. For example, "How do you add a value to the end of a list in python?" Where it crosse the line, in this course, is using it to solve a problem. For example, "Write a python program to compute the circumference of a circle."

You are here to learn how to be a software professional. Cheating will not help you develop and hone your skillset. It is not in your best interest to take short cuts, nor is it fair to those students who do not.

I have a zero tolerance policy for academic dishonesty in my classes. You will receive a zero grade for any assignment, program, quiz or test on which you cheat, including for those that were written partially or fully by an artificial or human assistant. If a second offense occurs in my class, you will receive an F in the course.

To ensure that you are aware of what is considered academic misconduct, you should review carefully the definitions and examples provided in the Student Handbook. If you have questions in this regard, please contact me without delay.

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violation of these prohibitions may be subject to University disciplinary action under the Code of Student Conduct.

Discussion of Concerns

If you have difficulties or concerns related to this course, your first action should be to discuss them with your instructor. If such a discussion would be uncomfortable for you or fails to resolve your difficulties, you should contact the Computer Science Department Chairperson, Dr. Letha Etzkorn at cschair@uah.edu. If you are still unsatisfied, you should contact Dr. Terri Johnson, Assistant Dean for UG Affairs, College of Science, at science.adean@uah.edu.

College/Department Information

Computer Science (CS) has a set of general policies issued by the CS department. The policies are at https://www.uah.edu/science/departments/computer-science/cs-resources/cs-policies. Individual courses may have additional policies that your instructor will enforce, in addition to these departmental policies.

Class Schedule

Tests and assignments will be due on or near the dates provided in the schedule.

Date	Topics Covered	Reminders	Alignment/Course Objectives
Weeks 1 - 3	Chapter 1 through Chapter 3 Intro to RUST		*Assign program 1 in week 3*
Weeks 4-6	Chapter 4 through Chapter 5		
	TEST 1, October 2	*Test covers material through Ch 5*	
Weeks 7-9	Chapter 6 through Chapter 7	*Prog 1 due ~ 9/30*	*Assign program 2 in week 7*
Week 10-11	Chapter 8 through Chapter 9 RUST Threads	*Prog 2 due ~ 10/23*	*Assign program 3 in week 10*
	TEST 2, November 6	*Test covers material from Ch 6 through 9*	

Week 12-15	Chapters 10,11,12, 14 15	*Prog 3 due ~ 11/20* *Security Essay Due ~ 12/2*	
	Thanksgiving Holiday is the Week of Nov 25th		
Final Exam	Final is comprehensive		See UAH Schedule for Final exam date and time.

University Information

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Disability Statement

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Pertinent UAH Policies

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- Academic Misconduct Policy
- Complete listing of UAH Policies and Procedures

Campus Resources

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- Academic Support Services—ASAP, Student Success Center, Tutoring, PASS, Academic Support Centers by College
- Student Support Services—Counseling Center, Disability Support Services, Student Health Services, Office of International Services, Multicultural Affairs, etc.

- UAlert—Sign up for UAH's emergency notification system to receive urgent messages from the university
- Registrar's Office—Academic Calendars, Course Registration, Student Records, Commencement
- M. Louis Salmon Library—Printed and Online Resources, Reference Services, Group Study Rooms, AV Resources, Printing
- Office of Diversity, Equity, and Inclusion—Anti-racism resources, LGBTQ resources, lactation rooms, name change requests, internet access assistance, Title IX
- Canvas Support—Call 844-219-5802 to report an issue with Canvas.
- OIT Help Desk—For technical support, contact the OIT Help Desk (helpdesk@uah.edu; 256.824.3333)

NOTE: When submitting a support ticket include your name, your class, the element/assignment being affected, and a detailed description of the issue. Providing a screenshot is often very helpful in diagnosing an issue.

Important Dates

Review the semester dates and deadlines and the academic calendar.

Subject to Change

Every effort is made to follow the guidelines in the syllabus; however, if needed, the syllabus will be amended. You will be notified if changes are made.

CS221-03 SP2022 Syllabus

Class Time: T/TH 6-7:20pm
Class Location: N308
Instructor: Mr. James Williamson
Office: TH N334
Email: jtw0014@uah.edu (Use Discord to contact me. I do not check email often enough)
Office Hours: Discord: You can expect a response within an hour pretty much any time you message me on discord. My phone will notify me. But I will designate **T/TH 12pm-1pm** as office hours. The only real difference is I personally guarantee an immediate response during those times. But you will likely get immediate responses outside those hours anyway. In person: By appointment and only when absolutely necessary.

Course Description:
Continuation of CS 121 with emphasis on advanced features of the C++ programming language, including pointers, recursion, classes, inheritance, and polymorphism. Introduction to fundamental data structures including linked lists, stacks, queues, and binary search trees. Basic sorting and searching algorithms. Practical experience in the design, development, and documentation of significant object-oriented programs. Prerequisites: CS 121, MA 113. Co-requisite: MA 171.

Textbook:
C++ Plus Data Structures, 5th ed, Dale, Nell and Teague David,. Jones and Bartlet Publishers, 2003. (Note: 4th addition is the designated version but older editions are acceptable, and a lot cheaper.)

Helpdesk Schedule:
The Help Desk Office is room TH N330. If you have questions on the lectures or assignments, but don't have a time to meet the instructor, you can meet the TAs during their available hours. The schedule should be posted, on the door, within 2 weeks of semester's begin.

Objectives:
• In depth presentation of advanced programming using the C++ including pointers and data structures.
• Introduction to the principles of Software Engineering including algorithm analysis, software design, and documentation.

• In depth discussion of software testing with an emphasis on the importance of software testing including types of testing, how to design a software test, and how to write a Software Test Plan.
• In depth presentation of the fundamental principles of algorithm development and program design, development, and testing with a brief introduction to the Unified Modeling Language (UML).
• Introduction to abstract data types (ADTs): queues, stacks, linked lists, binary trees, and graphs.

• Introduction to the implementation of abstract data types in C++.
• Practical experience in these topics by means of independent programming assignments.

Assessment:

		Percentage
Attendance/Participation		0%
Tests (3)	13% each	39%
Programming Assignment (4)	9% each	36%
Final Exam		25%

Grading Scale

A	[90, +∞)
B	[80, 90)
C	[70, 80)
D	[60, 70)
F	[0, 60)

Course Policies:

Attendance: Attending the class during all scheduled meetings is **not** expected nor recommended during such trying times in the world. I have set up the class in the same way an online course is conducted, except the difference is I will personally give live lectures streamed directly from the classroom assigned to us via zoom. This is for your benefit. You are welcome to attend in person if you like. But you are also welcome and even encouraged to stay home and watch live, or watch the lecture recording once it's posted after the lecture is over. If you attend live, you are allowed to buzz in and ask questions just like you were physically present. You may take advantage of this for any reason, whether it's to avoid potential covid exposure, you have other things to do, or even you're too tired. I don't care. The point is to keep the total count of bodies in the room at once as low as possible. However, you ARE responsible for information and any announcements distributed during the lectures. So if you don't attend live, you MUST watch the video.

Discord: **MANDATORY!** I maintain a person discord server for all my classes. This is the primary way I will communicate with students outside of class. Discord allows me to be available to you as often as I am able. This complements the work-from-home style curriculum I am pushing for this semester. This will be the 5th semester I have used it, and about 94% of students approve or greatly approve of this format. I will continue to use this format even if I were to return my classes to in-class only. You may ask me at any time for an invite code, or ask a fellow student for an invite code. You can also find one in the Instructor Introduction page.

Mask Policy: Masks are **MANDATORY** at all times while inside buildings at UAH. This includes students and faculty alike. Every student that attends in person must be masked at all times. I am actually, per the university's policy, not allowed to continue class while there is an unmasked student present. This has a lot to do with why I'm allowing the students to stay at

home. I understand masks are inconvenient. Believe me when I say, I hate having to wear them, especially while lecturing for hours and hours. But I do so to protect everyone around me. I insist that you show me and your fellow students the same courtesy. You will never see my face this entire semester unless it's a picture of me or if I'm recording myself lecturing from home.

Programming Assignments: There will be 4 programming assignments each designed to provide experience in the topics being covered in class. You will be required to turn in some program planning written work prior to the date that the programs are due. Work turned in **MUST** meet the following requirements:

• The written documentation (Design Document, and Test Plan) for each programming assignment must be turned in via Canvas Dropbox by the designated date in the syllabus and must be turned in before the program source code. Documentation turned in at the same time as the source code will not be accepted. Documentation is worth 30%.

• Electronic copies of the source code (.cpp and .h files) must be submitted via Canvas Dropbox by the designated date. **Do not turn in** any project files with the following extensions .sln, .dsp, .dsw, .ncb, .opt, .plg, .obj, .ilk, .pch, .pdb, .idb, .vcproj, .user, or .exe. **Do not turn in** a source file containing a main() function. The instructor will compile and run your source code using a special test driver containg a main() function. Source code that will not compile will receive no credit. Source code is worth 70%.

To learn how to develop a programming assignment document, please view the example here (Links to an external site.) (Created by Dr. Rick Coleman). You may need to access this link from inside the CS domain.

All programming assignments should be submitted online and on time, as specified in the course schedule. Late submissions are **NOT** accepted. In fact canvas will not even allow you to turn them in after the due time. If you have difficulties, please contact the instructor *before* the due dates; otherwise, no exception permitted.

Testing Policy: UAH mandates that we put the student through an in-person test and personally verify with our own eyes that the student has met the credentials necessary to be awarded credit for the course. In other words, even if lectures and everything else can be online-only if the student wants, tests cannot. So during test days, we will have to come to class to do them. For this reason, I am planning shorter tests, and breaking the class up into a partition of students to arrive at set intervals to keep the body count low. The tests are canvas quizzes, so you will either need to bring your own machine with access, or take the test in the computer lab. More details will be given in lecture at the appropriate time.

Honor Code: Academic honesty is essentially important for developing personal integrity and reaching the educational goal of the university. The grade will be "0" if a student completes an assignment (project, exam, etc) with inappropriate helps or unauthorized study aids.

Students with Disabilities: For all student disabilities and accommodations needed, you should also contact Disability Support Services in Madison 131, phone number is (256)824-1997 for further assistance. *https://www.uah.edu/dss*

Complaint Procedures: If you have difficulties or complaints related to this course, your first action usually should be to discuss them with the teacher. If such a discussion would be uncomfortable for you or fails to resolve your difficulties, you should contact Dr. Letha Etzkorn, Chair of the Computer Science Department. His office is TH N300B, telephone number is (256)824-6088, and email address is info@cs.uah.edu. If you still are unsatisfied, you should discuss the matter with the Associate Dean of the College of Science. The Associate Dean's office is MSB C206, telephone number is (256)824-6844 and email address is rochowd@uah.edu.

UAlert Emergency Notification System: UAHuntsville has implemented the UAlert emergency notification system. UAlert allows you to receive time-sensitive emergency messages in the form of e-mail, voice mail, and text messages. Everyone who has a UAHuntsville e-mail address will receive emergency alerts to their campus e-mail address. In order to also receive text and voice message alerts, you are asked to provide up-to-date phone contact information. Participation in UAlert text and voice messaging is optional, but enrollment is strongly encouraged. You can't be reached through UAlert unless you participate. The information you supply is considered confidential and will not be shared or used for purposes other than emergency notification. To review your UAlert account, add or update phone and alternate e-mail addresses, and set the priority for your contact methods, please visit the UAlert web site: http://ualert.uah.edu.

Course Schedule: I have made every effort to plan the course out well with reasonable pacing, but it may be that we're moving too fast/slow and the schedule may change. Please view the published schedule to plan your semester but realize that it might change. Assignment deadlines may change as well. I will announce in class and email if such changes occur.

Course Schedule:

Weeks	Dates	Topics	Notes
1	01/11	Course Overview, Syllabus & Introduction	
	01/12	Review of Computer Organization and Data Representation (Hardware, Software, Memory and Decimal-Binary Conversion)	CS121
2	01/18	Review of C/C++ and Visual Studio (Primitive Data Types, Standard C I/O, Flow of Control)	CS121
	01/20	Intro to Software Engineering (Software Life Cycles, Software Design, Object-Oriented Programming)	Chapter 1
3	01/25	Data Structure and Classes - Part 1 How to Prepare Assignment Doc	Chapter 2 (Prog 1 posted)

	01/27	Pointers	
4	02/01	Data Structures and Classes - Part 2	Chapter 2
	02/03	UML, Software Testing and Debugging Review for Test 1	Chapter 1
5	02/08	Test 1	
	02/10	Discuss Test 1 Result Introduction to Abstract Data Types	Chapter 3
6	02/15	Linked Data Structures & STL	Chapter 3
	02/17	Analysis of Algorithms	Prog 2 posted
7	02/22	Linked Lists (Unsorted and Sorted)	Chapter 3&4
	02/24	Stack and Queue	Chapter 5
8	03/01	List Plus	Chapter 6
	03/03	Binary Trees - Part 1	Chapter 8
9	03/08	Other Types of Trees (AVL trees, Heaps, 2-3 trees, b-trees, tries) Review for Test 2	Chapter 8
	03/10	Recursion - Part 1	
10	03/15	**SPRING BREAK**	

	03/17	**SPRING BREAK**	
11	03/22	Test 2	Chapter 7 Prog 3 posted
	03/24	Discuss Test 2 Recursion - Part 2	Chapter 7
12	03/29	Graphs	Chapter 9 Prog 4 posted
	03/31	Sets	Chapter 9
13	04/05	**HONORS DAY, NO CLASSES**	
	04/07	Hash Tables	Chapter 9
14	04/12	Sorting Algorithms - Part 1	Chapter 10
	04/14	Sorting Algorithms - Part 2 Review for Test 3	
15	04/19	Test 3	
	04/21	Discuss Test 3 Result Review for Final Exam	Chapter 10
16	04/29	**Final Exam: 04/26, Tuesday, 6:30pm-9pm**	Final exam will be comprehensive

Course Summary:

Date	Details
Fri Jan 14, 2022	Assignment Joined Discord
Mon Feb 7, 2022	Assignment Program Assignment 1 Design Documents
Wed Feb 9, 2022	Assignment Test 1
Sun Feb 13, 2022	Assignment Superbowl pick
Wed Feb 16, 2022	Assignment Program Assignment 1 Source Code
Wed Mar 2, 2022	Assignment Program Assignment 2 Design Docs
Wed Mar 9, 2022	Assignment Program Assignment 2 Source Code
Mon Mar 21, 2022	Assignment Test 2
Wed Mar 30, 2022	Assignment Program Assignment 3 Documents
Wed Apr 13, 2022	Assignment Program Assignment 3 Source Code
Mon Apr 18, 2022	Assignment Test 3
	Assignment PA 4
Fri Apr 29, 2022	Assignment Final Exam
	Assignment Final Exam
	Assignment Review 1 attendance
	Assignment Review test 2 attendance

Published: July 29, 2023

CS424/524-01: Programming Languages

Course Information

Contact

Instructor: Beth Allen
Office: OKT N300G
Email Address: beth.allen@uah.edu or mea0010@uah.edu
Phone Numbers: 256-824-5320
Availability/Office Hours: www.cs.uah.edu/~mea0010/

Details

Course Name: CS424/524 Programming Languages
Mode of Delivery: Traditional
Credit Hours: 3
Semester/Year: Fall 2023
Meeting day, time, and location: MW 1:00pm-2:20pm, OKT N326
Prerequisites: CS 317

Overview

Description: Principles of modern programming language features and design. Comparative study of language paradigms. Overview of language implementation, including lexical, syntax, and semantic analysis. Formal grammars, BNF notation. Brief history of programming languages.

Students are expected to have good programming skills, including knowledge of C, C++ or Java, and a thorough knowledge of data structures and algorithms.

Note that the object of the course is not to master many new programming languages, but to learn how different languages implement various programming language features, and to study the trade-offs involved.

Objectives

Upon completion of this course, the student will be able to:

- Distinguish and explain in detail how programming language features are defined and classified;

- Analyze features in various programming languages and evaluate their strengths and weaknesses;
- Understand the implications of programming language implementations;
- Utilize hands on experience by writing solutions in non-traditional and up and coming programming languages and paradigms.

ABET Outcomes Include:

- Recognition of the need for, and an ability to engage in, continuing professional development.
- An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.

Materials

Required

- **Concepts of Programming Languages**, 12th Edition, by Robert W. Sebesta. You do not need to purchase any additional web access codes or the clicker for this section of the course.

Technology Statement

Software Requirements

You need an account to use the CS department computers. Apply online at http://www.cs.uah.edu/account/

We will use several programming environments that can be installed on your own systems, and are free to use.

This course will use UAH's learning management system, Canvas, as well as other technology tools. Students will be expected to have access to a computer with internet capabilities in order to fully participate in this course.

Evaluation and Grading

The following grading scheme will apply in this course:

A = 90% - 100%
B = 80% up to < 90%

C = 70% up to < 80%
D = 60% up to < 70%
F = 0% up to < 60%

Evaluation and grading will be based upon the following weighted assignment groups. I strive to return all graded work within one week of the due date.

Assignment Types You'll See in this Class	What to Expect	%
Programming Assignments	You will be required to complete three to four programming assignments in a variety of emerging or non-traditional programming languages. All programming assignments in this course are to be individual work only. Plagiarism of code will not be tolerated.	15%
Tests	There are two closed-book, closed-notes tests during the semester. See the schedule for timeframe and approximate topics.	55%
Final Exam	The Final Exam will be a comprehensive final and will cover all of the topics and materials in this course. You will be expected to recall information without access to your notes.	30% CS424 or 20% CS524
CS524 Research Paper/ Presentation	This assignment only applies to students enrolled in the CS524 section of the course. There will be a research paper and /or presentation assignment in selected programming language topics.	10% CS524 Only

Missed Assignments/Make-Ups/Extra Credit

I do not accept late work in 400 level and above CS courses, unless there is an unavoidable extenuating circumstance that necessitates extra time. This may include an illness, other than minor situations, an accident, a family emergency. Verifiable documentation is required to obtain makeup time. If you will miss a test or a test deadline, you must notify me in advance with a valid excuse, to be allowed to make up the test. If a makeup test must be given, it may be a different exam than the original test.

Attendance Policy

When you miss class, you miss important information. If you are absent, you are responsible for learning material covered in class. If you are absent when an assignment is due, you must have submitted the assignment prior to the due date to receive credit. Please contact your instructor if you have specific questions or concerns.

Communication & Instructional Continuity

In this class, the official mode of communication is through either Canvas or UAH email. Students can expect a response from the instructor within a 2 business days time frame.

In the event a regular scheduled course is unexpectedly interrupted, course requirements, due dates, and grading policy are subject to change when necessitated by revised course delivery, semester calendar, or other instances. Information about changes in this course can be obtained from the Canvas course webpage or by contacting me. If I do not respond within 2 business days, please contact my department at cschair@uah.edu or the college dean at science.dean@uah.edu.

If our regular scheduled class meeting is interrupted or the campus should unexpectedly close, students should log onto Canvas and read any course announcements. Students are encouraged to continue the readings and other assignments as outlined on the course syllabus until otherwise advised. Any student who does not could fall behind in the course.

Course Conduct

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Class Schedule

This is a tentative schedule. Tests and assignments will be due on or near the dates provided in the schedule.

Date	Topics Covered	Reminders	Alignment/Course Objectives
Weeks 1 - 6	Chapter 1, Chapter 3 Terms from Chapter 4, Chapter 5, Chapter 6	1st Programming Language: Go	Assign program 1 near Sept. 11 Graduate Paper topics finalized Sept. 20
Week 7	TEST 1, Sept. 25	2nd Programming Language:TBD	Test 1: Covers Ch 1, 3, 4, 5, 6
Weeks 7-10	Chapter 7, Chapter 8, Chapter 9, Chapter 10, Chapter 11, 12	Program 1 due on or near Oct 2 Program 2 due on or near Oct 18	
Week 11	TEST 2, Oct 25		Test 2: Covers Ch 7, 8, 9, 10, 12
Weeks 12-15	Chapter 16, Chapter 15, Chapter 14, Chapter 2	Program 3 due on or about November 15	Graduate Student Presentations will tentatively be Nov 13/15
Final Exam	Dec 4, Monday, 3:00 - 5:30pm	See UAH Schedule to confirm Final exam date and time.	Final is comprehensive

University Information

Disability Statement

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NOTE: When submitting a support ticket include your name, your class, the element/assignment being affected, and a detailed description of the issue. Providing a screenshot is often very helpful in diagnosing an issue.

Important Dates

Review the semester dates and deadlines and the academic calendar.

Subject to Change

Every effort is made to follow the guidelines in the syllabus; however, if needed, the syllabus will be amended. You will be notified if changes are made.

(CS 307-01) (SP22) OBJECT ORIENT/PROG C++

Jump to Today ✎ Edit

This is a summary of the course information contained in : M00 -Syllabus

Contact Information

Mr. Kevin Preston

Phone: 256-824-6347
email: rkp0001@uah.edu

Students should contract me via Canvas email or email me directly at rkp0001@uah.edu. During normal class days/hours (Monday - Thursday, 6:00 AM to 4:00 PM) expect a response from me within 2 hours. Outside of normal business hours a response should not be expected until the next class day.

This is an in person course and students are expected to attend class.

GTA Information

TBD

email: TBD@uah.edu (mailto:vp0039@uah.edu)

Office Hours

Monday-Thursday 6:30 to 8:00 AM. When requested: Monday-Thursday 11:00 to Noon. Other times on request.

Course Overview

Course Description:

Emphasis on principles of software engineering and object-oriented design. Practical experience using the standard C++ library, the standard template library, and design patterns. Introduction to and experience with graphical user interface applications. Prerequisite: CS 221 (https://catalog.uah.edu/search/?P=CS%20221) .

Course Goals

1. Upon completion of the course, students will have demonstrated (in two large programming assignments and various quizzes) an in-depth understanding of the principles of Software Engineering (with a focus on Object Oriented Programming).
2. Upon completion of the course, students will have demonstrated (in two large programming assignments and various quizzes) an in-depth understanding of Object Oriented Design with an emphasis on Design Patterns.

3. Upon completion of the course, students will have demonstrated (in two large programming assignments and various quizzes) an in-depth understanding of C++ programming techniques and syntax with an emphasis on Object Oriented Programming.
4. Upon completion of the course, students will have hands-on practical experience (from the development of two large programming assignments) in the above topics.

Grading Policies

See the Assignments for the weighting of each assignment group. I use a traditional grading scale: A (90% and above), B (80 and above), C (70 and above), D (60 and above) and F (less than 60).

I strive to return all graded work within one week of the due date.

Late work MAY be accepted depending on the assignment. Check the specific assignment in Canvas if late submissions will be accepted. If you will miss a test or a test deadline, you must notify me in advance with a valid excuse, in order to be allowed to make up the test. Students not seeing an assignment due date in Canvas will NOT be accepted as a valid excuse.

Important Dates

See the assignment link for due dates. These are subject to change. Students should check Canvas several times per week for changed dates.

General Policies for All of My Courses

Please review the Computer Science department policies here: **UAH CS Department Policies (https://www.uah.edu/science/departments/computer-science/cs-policies)**

Optional Textbook

The textbook for this course is optional but it is highly recommended as a reference material for work.

Design Patterns: Elements of Reusable Object-Oriented Software 1st Edition. You can see this textbook on Amazon on this **link** (https://www.amazon.com/Design-Patterns-Elements-Reusable-Object-Oriented/dp/0201633612/ref=sr_1_3?crid=EJ8C1FUNPAM6&dchild=1&keywords=design+patterns+elements+of+reusable+object-oriented+software&qid=1597080564&sprefix=design+patterns+%2Caps%2C196&sr=8-3).

Several pages of this textbook can be viewed on Amazon under the LOOK INSIDE link.

Academic Continuity Plan

This is a traditional course but students should always have backup plans to access course material and be prepared to go to a fully on-line course format at anytime during the semester.

Plagiarism and Academic Honesty

In an academic setting it is critical that students turn in material that is their own work. In class tests and quizzes are closed book and only material provided by the instructor may be used by the students on the exam. Out of class assignments (i.e., Programming assignments) are also expected to be the student's own work. Outside help on these assignments are limited to your instructor and the CS Help Desk. Getting help from websites such as chegg.com, tutor.com, etc. is strictly prohibited. Students violating this policy will receive a zero on the assignment and be reported per UAH Policy 02.01.67 (https://www.uah.edu/images/administrative/policies/02.01.67-aa-academic-misconduct-policy.pdf) . Repeated violations by the student may result in a failing grade for the course.

Course Summary:

Date	Details	Due
Sun Jan 16, 2022	L01 Quiz Syllabus (https://uah.instructure.com/courses/58911/assignments/619642)	due by 11:59pm
	L02 Object Discussion (https://uah.instructure.com/courses/58911/assignments/619649)	due by 11:59pm
	L02 Quiz (https://uah.instructure.com/courses/58911/assignments/619641)	due by 11:59pm
	L03 Quiz (https://uah.instructure.com/courses/58911/assignments/619638)	due by 11:59pm
	L03 State Machine Diagram (https://uah.instructure.com/courses/58911/assignments/619650)	due by 11:59pm
	L03a PlantTextUML editor Assignment (https://uah.instructure.com/courses/58911/assignments/619661)	due by 11:59pm
Sun Jan 23, 2022	L04a Quiz (https://uah.instructure.com/courses/58911/assignments/619645)	due by 11:59pm
	L04b - Epic or User story (https://uah.instructure.com/courses/58911/assignments/619652)	due by 11:59pm

Date	Details	Due
	L04b Quiz (https://uah.instructure.com/courses/58911/assignments/619644)	due by 11:59pm
Sun Jan 30, 2022	L05 CMMI Assignment (https://uah.instructure.com/courses/58911/assignments/619662)	due by 11:59pm
	Programming Assignment 1: Preliminary Class Diagram (https://uah.instructure.com/courses/58911/assignments/619665)	due by 11:59pm
Sun Feb 6, 2022	L07 Quiz (https://uah.instructure.com/courses/58911/assignments/619635)	due by 11:59pm
	L07 Requirements (https://uah.instructure.com/courses/58911/assignments/619651)	due by 11:59pm
	L08 Design (https://uah.instructure.com/courses/58911/assignments/619654)	due by 11:59pm
	Programming Assignment 1: Class Outline (https://uah.instructure.com/courses/58911/assignments/619663)	due by 11:59pm
Sun Feb 13, 2022	L09 Quiz (https://uah.instructure.com/courses/58911/assignments/619646)	due by 11:59pm
	L10 Quiz (https://uah.instructure.com/courses/58911/assignments/619636)	due by 11:59pm
	L10 Test as you fly - failures (https://uah.instructure.com/courses/58911/assignments/619655)	due by 11:59pm
	L10 Testing (https://uah.instructure.com/courses/58911/assignments/619653)	due by 11:59pm
	Programming Assignment 1: Functionality Outline (https://uah.instructure.com/courses/58911/assignments/619664)	due by 11:59pm
Wed Feb 16, 2022	Test 1 (https://uah.instructure.com/courses/58911/assignments/619674)	due by 11:20am

Date	Details	Due
Sun Feb 27, 2022	Programming Assignment 1 Visual Studio Project (https://uah.instructure.com/courses/58911/assignments/619666)	due by 11:59pm
	Singleton Pattern (https://uah.instructure.com/courses/58911/assignments/619637)	due by 11:59pm
Tue Mar 1, 2022	L12 to L18 DP Part I (https://uah.instructure.com/courses/58911/assignments/619643)	due by 11:59pm
Sun Mar 6, 2022	L19 to L24 DP Part II (https://uah.instructure.com/courses/58911/assignments/619647)	due by 11:59pm
	Programming Assignment 2: Preliminary Class Diagram (https://uah.instructure.com/courses/58911/assignments/619669)	due by 11:59pm
	Singleton Pattern Part II (https://uah.instructure.com/courses/58911/assignments/619640)	due by 11:59pm
Sun Mar 13, 2022	L25 to L30 DP Part III (https://uah.instructure.com/courses/58911/assignments/619648)	due by 11:59pm
	L31 to L36 DP Part IV (https://uah.instructure.com/courses/58911/assignments/619639)	due by 11:59pm
	Programming Assignment 2: Class Outline (https://uah.instructure.com/courses/58911/assignments/619667)	due by 11:59pm
Wed Mar 16, 2022	Test 2 (https://uah.instructure.com/courses/58911/assignments/619675)	due by 11:20am
Sun Mar 20, 2022	GUI Exercise 01 (https://uah.instructure.com/courses/58911/assignments/619658)	due by 11:59pm
	Programming Assignment 2: Functionality Outline (https://uah.instructure.com/courses/58911/assignments/619668)	due by 11:59pm

Date	Details	Due
Sun Mar 27, 2022	GUI Program 02 (https://uah.instructure.com/courses/58911/assignments/619659)	due by 11:59pm
Sun Apr 3, 2022	GUI Program 03 (https://uah.instructure.com/courses/58911/assignments/619660)	due by 11:59pm
	Programming Assignment 2 Visual Studio Project (https://uah.instructure.com/courses/58911/assignments/619670)	due by 11:59pm
Sun Apr 10, 2022	Sketcher 01 (https://uah.instructure.com/courses/58911/assignments/619671)	due by 11:59pm
	Sketcher 02 (https://uah.instructure.com/courses/58911/assignments/619672)	due by 11:59pm
	Sketcher 03 (https://uah.instructure.com/courses/58911/assignments/619673)	due by 11:59pm
Wed Apr 20, 2022	Final Exam - Essay (https://uah.instructure.com/courses/58911/assignments/619656)	due by 9:40am
Wed Apr 27, 2022	Final Exam - Short Answer (https://uah.instructure.com/courses/58911/assignments/619657)	due by 8am

Published: December 21, 2021

CS321-02 OOP/JAVA - SPRING 2022 T/R 9:40 - 11:00AM OKT N324

CONTACT INFORMATION

Beth Allen, Campus Phone: 256-824-5320; **Skype:** 256-715-5320; **email:** beth.allen@uah.edu;
discord: Professor_Beth#2791

The best way to get in touch in general is via email. I check my email daily on weekdays and once over weekends, and will get back to you as soon as possible. I am also available by phone. Please leave a message in case I need to get back to you, if I miss your call.

Zoom Privacy Policy: https://explore.zoom.us/docs/en-us/privacy.html

Discord Privacy Policy: https://discord.com/privacy

OFFICE HOURS

See Office Hour Information here.

COURSE DETAILS

Description: Writing substantial object-oriented programs in Java, including design, documentation and testing. Advanced data structures (e.g., balanced trees, hash tables). Graphical interface programming using the Java abstract windowing toolkit. Comparison with other object-oriented languages, notably C++. Prerequisites: CS 221.

Course Goals and Outcomes:

After completing this course, you should be familiar with/understand the following:

- Describe principles of object-oriented design and programming
- Explain the concepts of data encapsulation, inheritance, interfaces, polymorphism, and persistence
- Explain the theory behind many of the programming structures, constructs, and library codes, including generics and concurrency, exposed by the Java language
- Design a computer program to solve complex problems based on object-oriented principles
- Evaluate and explain design choices
- Write extended computer programs to solve complex problems in Java
- Evaluate object-oriented designs and programs
- Integrate robustness and usability into software development
- Work effectively as a team member
- Develop software with teamwork in mind

GRADING POLICIES – GRADING WEIGHTS AND SCALE

The graded works in this class are weighted as follows: Group Project (30%), Independent Project Contributions (10%), Quizzes/Program Exercises (30%), Final (30%). I use a traditional grading scale: A (90% and above), B (80% and above), C (70% and above), D (60% and above) and F (less than 60%).

I strive to return all graded work within one week of the due date. Late penalty is 20% per day, no late assignments accepted once solutions have been posted.

If you will miss a deadline, you must notify me in advance with a valid excuse, in order to be allowed to make up the work. If a makeup test must be given, it will be a different exam than the original test.

TENTATIVE COURSE SCHEDULE

Topics Covered

- Chapter 1: A Crash Course in Java
- Chapter 2: The Object-Oriented Design Process
- Chapter 3: Guidelines for Class Design
- Chapter 4: Interface Types and Polymorphism
- Chapter 5: Patterns and GUI Programming
- Chapter 6: Inheritance and Abstract Classes
- Chapter 7: The Java Object Model
- Chapter 9: Multithreading

There are several components to the course.

1. Getting to know Java – Become familiar with the Java language and the NetBeans IDE or IntelliJ IDE.
2. Mastering Java development – By the end of the course, you should master the basics of the Java language, interfaces, collections, multithreading, swing gui development, event handling, 2D graphics, and design patterns.
3. Understanding object-oriented software development – The topics in chapters 2, 3, 4, 6, and 7 will be especially important. We will focus on accepted and best practices in OO software development. By the end of the course, you should master a simple software design methodology, the use of CRC cards in software development, basics of UML, inheritance, and polymorphism.
4. Experience working in a team environment – This is an extensive project that uses the content of the first three sections in a group project. The project will cover all areas from requirements to testing. There will be several graded submissions and presentations. Additional Java constructs and tools will also be examined. The deliverables for this section will be the working program, the implementation code, Javadoc for the code, and project documentation. The project will be broken into several sub-parts.
5. Final exam – The final exam will provide the opportunity to present your understanding of the course materials.

IMPORTANT DATES

Quizzes: Short topic quizzes will be given in class will be given periodically through the term.
Programming Exercises: Several short programming exercises will be given during the first half of the term.
Final: Thursday, April 28, 8:00am – 10:30am (See UAH Schedule)
Project Presentation Dates (estimated):

- Week of March 3, team designs due,
- Week of March 23, private team implementation status reviews,
- Week of April 18, implementations due

I will provide Project Outline Materials with interim due dates on Team Projects. There are several. The project interim milestones and deadlines will be posted on canvas in the assignments section.

No assignments will be accepted after April 21 (last day of classes).

ACADEMIC INTEGRITY

Academic Integrity is of utmost importance for all students to adhere to. Please review the UAH Academic Misconduct Policy.

Academic dishonesty can be defined as receiving (or providing) unauthorized assistance on any graded assignment, program, quiz or test. This includes, but is not limited to, working with another person on a programming assignment, copying test answers from other papers, attempting to use electronic media of any sort during a closed exam, copying work from outside sources such as websites or books, paying a service to assist you, looking for solutions on stack overflow, and so on.

You are here to learn how to be a software professional. Cheating will not help you develop and hone your skillset. It is not in your best interest to take short cuts, nor is it fair to those students who do not.

I have a zero tolerance policy for academic dishonesty in my classes. You will receive a zero grade for any assignment, program, quiz or test on which you cheat. If a second offense occurs in my class, you will receive an F in the course.

TEXTBOOK

The Textbook used in this course is a free preview copy. You do not need to purchase a text.

INTERNET ACCESS NOTICE

This course is planned to be traditional, delivered on campus. However, it is possible that unexpected events may require the university transitions to distance learning temporarily during the semester. If that happens during a date that I have a scheduled test or exam, I reserve the right to break that test into multiple, shorter exams, given on different dates in order to facilitate taking them online. You will be required to use the lockdown browser, so you should have everything installed that you need, in case this becomes necessary.

I urge you to have a strategy for getting on the internet, especially if your home internet is not reliable.

OTHER POLICIES

These policies apply to every course I teach at UAH (included at end of this syllabus).

- Academic Continuity Plan
- Expectations for Netiquette
- CS Department Polices

SOFTWARE REQUIREMENTS

Computer Account: You need an account to use the CS department computers. Apply online at **http://www.cs.uah.edu/account/**

Software: *For this course you may use either Apache Netbeans (12) or the current version of IntelliJ from Jetbrains. You must install a Java SDK prior to installing your IDE. You must use JDK 15 (or you may use java 12 which is installed in our labs). No other versions will be accepted. Please note, our text has some information from Java JDK 8, which is outdated.*

You may download Java JDK here: https://www.oracle.com/java/technologies/javase/jdk15-archive-downloads.html.

You must also install git software prior to installing your other software. Information will be provided in class.

Published: December 21, 2021

DISABILITY SUPPORT SERVICES

The University of Alabama in Huntsville will make reasonable accommodations for students with documented disabilities. If you need support or assistance because of a disability, you may be eligible for academic accommodations. Students should identify themselves to Disability Support Services (128 Wilson Hall, 256.824.1997) and their instructor as soon as possible to coordinate accommodations.

UALERT EMERGENCY NOTIFICATION SYSTEM

UAHuntsville has implemented the UAlert emergency notification system. UAlert allows you to receive time-sensitive emergency messages in the form of e-mail, voice mail, and text messages.

Everyone who has a UAHuntsville e-mail address will receive emergency alerts to their campus email address. In order to also receive text and voice message alerts, you are asked to provide up-to-date phone contact information. Participation in UAlert text and voice messaging is optional, but enrollment is strongly encouraged. **You can't be reached through UAlert unless you participate.** The information you supply is considered confidential and will not be shared or used for purposes other than emergency notification.

To review your UAlert account, add or update phone and alternate e-mail addresses, and set the priority for your contact methods, please visit the UAlert web site: **http://ualert.uah.edu**.

Published: December 21, 2021

ACADEMIC CONTINUITY PLAN

Please keep this information handy, in case of disruption to course delivery due to emergency or other causes. *Instructors may adapt to their own needs / plans.*

COURSE MATERIAL DELIVERY

I make extensive use of Canvas to post course materials in all of my courses, whether in person or online. For an online course, I sometimes pre-record lectures and make those available, as well. The university has asked that we try to record our lectures in the classroom so that students who miss class due to illness can keep up. Please let me know if you are missing class due to illness or quarantine, and the date range you will be absent, if possible.

You should download and make note of any reading assignments, problem assignments and programming assignments which you can work offline. This will ensure that you always can make progress on the material, in the event that Canvas or other internet tools are temporarily unavailable.

Please make sure to have canvas notifications turned on for my courses. I use announcements to communicate as much as possible, rather than emails or canvas mail. Any unanticipated changes to planned delivery of materials or testing are always posted to canvas. Canvas notices can be seen using the Canvas app on smart phones.

UNPLANNED TRANSITION TO ONLINE COURSE DELIVERY (*IF APPLICABLE*)

The experience this past year with Covid has taught us how to adapt quickly to changes in course delivery. While I do not anticipate it, there is always the possibility that we temporarily change to an online class format.

1) If the university deems it must close for any surge in illness, or move my class to distance, I will teach during our regularly scheduled class time via Zoom. I may post pre-recorded lecture modules in that instance. If a major test falls within the disruption window, I reserve the right to either move the test date, or break the test into smaller, multiple tests to be given online.

2) If I become ill, and must quarantine off-campus, I will continue to deliver the course remotely. I may choose to teach live during our regularly scheduled class time, or deliver pre-recorded lectures, or a combination of both.

3) Please get to know your classmates. As is customary, if you become ill, and cannot come to campus, you will need to arrange to get notes from other students. Every assignment or handout that we do in class will be available to you via canvas, but I do not have formal notes that I teach from. Slide decks used in class will be posted.

INTERNET ACCESS

If for some reason, your internet service is disrupted, UAH campus has several areas with access to the UAH wireless connection. You can use this internet access with your laptop to connect to canvas to take quizzes or download materials. Please check with UAH for the best places to connect while working remotely. You should have a back-up plan for time-sensitive assignments such as tests given via the Internet. When our computer labs are open in the CS department, you may work there, as well. The class schedules are posted outside of the lab rooms indicating when they are in use.

CONTACT INFORMATION

E-mail: I will be available on weekdays during working hours when I am not lecturing or recording. I recommend that you contact me via email with non-urgent questions. I will definitely be monitoring my during my office hours and other times that I am in the office.

Office Hours: Come by my office during posted office hours. If needed, for an in-person video discussion, I can facilitate those through Zoom. **By Phone:** You may call my office (256) 824-5320.

Published: December 21, 2021

EXPECTATIONS FOR NETIQUETTE

Rules of Netiquette for the department of Computer Science's Online Courses (Adapted from UTEP's online degree rules of etiquette). As my students, you are expected to adhere to these rules while participating in all online forums related to this course.

1. **Clearly identify yourself**. This is especially important in online environments where your username may be different than your university enrolled name. Introducing yourself at the beginning of correspondence, such as "This is Jason A." will suffice.
2. **Do not post inappropriate, threatening, harassing or offensive materials in any forum related to my courses.** If you are unsure about something, step back and revisit it before posting. Offensive, threatening or other inappropriate postings may result in you being banned or removed from online forums related to this course.
3. **Check your words.** It is very easy to be misunderstood in an online forum. Therefore, you must work diligently to ensure our words convey the meaning we think they will. All caps (SHOUT) or exclamation points ("Really!!!") can be misinterpreted as anger, humor or dismissiveness. Review what you write before posting it.
4. **Be polite. Do not say rude things that you would not say face to face.** There's no excuse for rudeness, shaming, condescension or meanness in this course. You are not anonymous in these forums, so do not act like it.
5. **Do not spam or troll other students or the group discussion.** Keep conversations relevant to the material we are covering in class. This is not the place to spread your favorite conspiracy theory, unless we are actually studying conspiracy theories.
6. **Feel free to use safe-for-work emoticons.** Sometimes a picture can convey feelings or direction that may get lost in the translation from speech to text.
7. **Respect others' privacy.** Do not give out other students' online information.
8. **Remember, the internet is permanent.** Do not share information about yourself you would not want to be released to the public.
9. **Forgive and forget.** If someone offends you, please try to remember that it is possible you misunderstood. Give your peers the benefit of the doubt. And peers, try to keep your communications as clear as possible to lessen the chances of being misunderstood.

Published: December 21, 2021

OFFICIAL UAH COMPUTER SCIENCE DEPARTMENT POLICIES AND PROCEDURES

This section is required and should be reviewed with the syllabus and discussed on the first day of classes.

1. RESPONSIBILITIES OF THE TEACHER

1) Provide a detailed syllabus. This syllabus should list office hours, course objectives, textbooks, references, prerequisites, and grading policy/method of assessment.
2) Come to class well prepared, on time, and make full use of the class time.
3) Provide timely and adequate feedback on grades. Return graded material promptly.
4) Conduct final exam at the time designated in the class schedule. Never post grades.
5) Not assign new work (i.e. not listed on syllabus) that is due in last two weeks of classes.
6) Avoid leaving the examination room without a proctor. Provide paper for exams.
7) Make reasonable use of the assigned textbook.
8) Check students have proper prerequisites. Instructor does not waive assigned prerequisites.
9) According to UAH policy 02.01.67, upon suspicion of academic dishonesty, the instructor will report suspicion in written format (containing student name, date of alleged infraction, and type of alleged infraction) to both the student and the instructor's department chair within ten business days. The instructor will meet with the student and hear the student's response within the following five business days after notification. Based on the response, the instructor will determine whether an academic sanction is appropriate and what academic sanction shall be assessed. The instructor must inform the student of the academic sanction within five business days after meeting with the student. The instructor will produce a brief written document that includes the students name, the infraction, and the terms of resolution and will send the document to the CS department chair. The CS department chair will keep a copy of the document and send copies to Academic Misconduct Monitor, Dean and Office of Academic Affairs. The current UAH Academic Misconduct Policy and procedures may be found at: https://www.uah.edu/policies/02-01-67-academic-misconduct-policy

2. RESPONSIBILITIES OF THE STUDENT (SEE ALSO, STUDENT HANDBOOK ARTICLE II)

1) Come to class with the proper prerequisites, well prepared, on time, and make full use of the class time.
2) Provide adequate notice of anticipated absences and take full responsibility for finding out about missed work, announcements, and assignments.
3) Submit assessment material on time and submit only your own work. (see integrity)
4) Do not allow other students to copy your work.
5) Read and understand the syllabus and follow announced policies.

3. INTEGRITY

We expect CS instructors and students to conduct themselves in a professional manner. Students are subject to all the provisions in the UAH Code of Student Conduct, which is available free from the Office of Admissions and Records (UAH Academic Misconduct Policy). Information on plagiarism and other forms of misconduct is presented in the Student Handbook Article III. *Departments are obliged to report all student misconduct to the Office of Student Affairs.*

4. COMPLAINT PROCEDURE

If you have difficulties or complaints related to this course, your first action should be to discuss them with your instructor. If such a discussion would be uncomfortable for you or fails to resolve your difficulties, you should ask for a meeting with the Chair of the Computer Science Department in Technology Hall N-300, info@cs.uah.edu, telephone 256-824-6088. *If you still are unsatisfied, you should discuss the matter with Dr. Emanuel Waddell, Associate Dean of the College of Science. The Associate Dean's office is MSB C207, telephone number 256-824-6844 and email address adeancos@uah.edu.*

5. STUDENTS WITH DISABILITIES

Your instructor would like to hear from anyone who has a disability that may require a modification of seating, testing, or other class procedures. Please see instructor after class or during office hours to discuss appropriate modifications. You should also contact Student Disability Services in WH 317 (Ph. 824-1997) or online at http://www.uah.edu/health-andwellness/disability-support/requesting-services for further assistance.

6. STUDENT COMPUTER ACCOUNT

Students enrolled in any CS course are entitled to an account on the departmental computer network. Use of such an account is subject to departmental and university policies. To apply for an account, and see the current policies, go to the departmental web site at http://www.cs.uah.edu/account/.

7. EXAMINATION POLICY

In response to past student complaints about problems during examinations, the Computer Science Department has developed the following guidelines for in-class examinations in all courses.

1) Come to the exam prepared to complete it without a break. If you think you will need a break, please inform the proctor before the exam if possible.
2) Do not communicate with other students. Talk only to the instructor.
3) Whenever you leave the exam room, turn in your exam.
4) Use only the paper provided by the instructor for all writing.
5) If assigned a specific seat, remain in that seat.
6) Unless specifically permitted by the instructor, use no books or other reference materials. Do not bring calculators, computers, pocket-organizers, cell phones, pagers, or other electronic devices to the exam.

(CS 499-03) (SP24) SR PROJ:TEAM SOFTWARE DESIGN

Jump to Today ✎ Edit

Important University Information

Course Information

Contact

Instructor: Mr. Kevin Preston

Office: OKT N348

Email Address: rkp0001@uah.edu

Phone Number: 256-824-6347

Availability/Office Hours:

Professor Preston Office Schedule
Spring 2024

Time\Day	Monday	Tuesday	Wednesday	Thursday
7:00 – 8:00 AM				
8:00 – 9:20 AM		*<Office>*		*<Office>*
9:40 -11:00 AM	Office	CS499-01 N324	Office	CS499-01 N324
11:20 – 12:40 PM	CS413-01 N324	*<Office>*	CS413-01 N324	*<Office>*
1:00 – 2:20 PM	CS656-01 N306		CS656-01 N306	
2:40 – 4:00 PM	*<Office>*		*<Office>*	
4:20 – 5:40 PM				
6:00 – 7:20 PM				
7:20 – 9:00 PM				

Office – Scheduled office time. I should be in my office during these times.

<Office> - Only if requested in advance. Any other times when requested by students.

When my office door is closed, I am not in the office. If it is during office hours, please wait I should be back shortly or look for me in the CS Department Office (N300) or Hardware Lab (S303).

Finals

CS656-01	04/29/2024	3:00 PM – 5:30 PM
CS499-03	05/02/2024	11:30 AM – 2:00- PM
CS413-01	05/03/2024	11:30 AM – 2:00- PM

Students should contract me via Canvas email or email me directly at rkp0001@uah.edu. During normal class days/hours (Monday - Thursday, 6:00 AM to 4:00 PM) expect a response from me within 2 hours. Outside of normal business hours a response should not be expected until the next class day.

Details

Course Name: CS499 Senior Project: Team Software Design

Mode of Delivery: In class (traditional lectures)

Credit Hours: 3

Semester/Year: Spring 2024

Meeting day, time, and location: Tuesday, Thursday 9:40 - 11:00 AM OKT N324

Prerequisites: CS 317 (https://catalog.uah.edu/undergrad/course-descriptions/cs/) .

Course Overview

Course Description:

A combination of lectures on proven software engineering approaches, and team working sessions. Each student will participate in a sizable, complex software development project based on a team approach. Each team will be required to provide oral and written documentation of their work. Prerequisite: CS 317 (https://catalog.uah.edu/undergrad/course-descriptions/cs/) .

Course Goals

When you have completed this course, you should have:

- An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.
- An ability to apply design and development principles in the construction of software systems of varying complexity.
- Practical experience in the software engineering process by participation on a team in the development of a major software system.
- Develop an understanding of the professional, ethical, legal, and social issues related to computing and the responsibilities of computing professionals with respect to these issues.
- An ability to communicate effectively with a range of audiences; customers, supervisor, team members, etc.
- Learn to recognize and analyze the impact of computing on individuals, organizations, and society.

Course Outcomes

Course outcomes describe what students are expected to know and be able to do by the time of graduation. They relate to the knowledge, skills, and behaviors that students acquire as they progress

through the program.

ABET outcomes include:

- Analyze a complex computing problem and apply principles of computing and other relevant disciplines to identify solutions.
- Communicate effectively in a variety of professional contexts.
- Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.

Grading Policies

Final grades are based on individual and team efforts. Factors figured in the final grade are:

- The number of requirements implemented in the final program delivery and its overall quality
- Participation in team presentations in class (preparation and class presentation).
- Participation in team software process out of class (team meetings and assigned tasks).
- Weekly team and individual reports.
- Quality of software and software documents prepared by the team.
- Individual work completed in each sprint. You will submit a weekly report.
- Final presentation of the team project.
- Feedback from your team members at the end of each sprint and for the project overall.

This is still a programming class. Each team member must have contributed some functioning code that **is part of the final project deliverable**. Failure to accomplish this, regardless of your other contributions to the project, will result in a lower grade.

Note: If the team "fires" a member because of lack of participation that member will receive an F for the course.

Important Dates

See the assignment link for due dates. These are subject to change. Students should check Canvas several times per week for changed dates.

General Policies for All of My Courses

Please review the Computer Science department policies here: **UAH CS Department Policies** **(https://www.uah.edu/science/departments/computer-science/cs-policies)**

Required Textbook

Recommended but not required

Software Engineering A Practitioner's Approach, 6th ed., Roger S. Pressman, McGraw Hill, Inc, 2005 (The instructor has copies that can be checked out for 2 weeks at a time.)

Academic Continuity Plan

This is a traditional course but students should always have backup plans to access course material and be prepared to go to a fully on-line course format at anytime during the semester.

Communication and Instructional Continuity

In this class, the official mode of communication is through [Canvas/UAH email]. Students can expect a response from the instructor within a [24/48 hour] timeframe.

In the event a regular scheduled course is unexpectedly interrupted, course requirements, due dates, and grading policy are subject to change when necessitated by revised course delivery, semester calendar, or other instances. Information about changes in this course can be obtained from the Canvas course webpage or by contacting me. If I do not respond within [24/48 hours], please contact my department at cschair@uah.edu or the college dean at science.dean@uah.edu.

If our regular scheduled class meeting is interrupted or the campus should unexpectedly close, students should immediately log onto Canvas and read any course announcements. Students are encouraged to continue the readings and other assignments as outlined on the course syllabus until otherwise advised. Any student who does not could fall behind in the course.

Course Conduct

All students must treat others with civility and respect and conduct themselves in a way that does not unreasonably interfere with the opportunity of other students to learn. All communication between student/instructor and between student/student should be respectful and professional.

Plagiarism and Academic Honesty

Your written assignments and examinations must be your own work. Academic misconduct will not be tolerated. Examples of unacceptable behavior include plagiarism/use of prior work/use of Chegg, ChatGPT and other online problem-solving sites or AI's. To ensure that you are aware of what is considered academic misconduct, you should review carefully the definitions and examples provided in the Student Handbook. If you have questions in this regard, please contact me without delay.

In an academic setting it is critical that students turn in material that is their own work. In class tests and quizzes are closed book and only material provided by the instructor may be used by the students on the exam. Out of class assignments (i.e., Programming assignments) are also expected to be the student's own work. Outside help on these assignments are limited to your instructor and the Student Success Center https://www.uah.edu/ssc/tutoring. Getting help from websites such as chegg.com, tutor.com, etc. is strictly prohibited. Students violating this policy will receive a zero on the assignment and be reported

per UAH Policy 02.01.67 (https://www.uah.edu/images/administrative/policies/02.01.67-aa-academic-misconduct-policy.pdf). Repeated violations by the student may result in a failing grade for the course.

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Discussion of Concerns

If you have difficulties or concerns related to this course, your first action should be to discuss them with your instructor. If such a discussion would be uncomfortable for you or fails to resolve your difficulties, you should contact the Computer Science Department Chairperson, Dr. Letha Etzkorn at cschair@uah.edu. If you are still unsatisfied, you should contact Dr. Terri Johnson, Assistant Dean of the College of Science, at science.adean@uah.edu (mailto:science.adean@uah.edu).

Class Schedule

The overall class schedule is given in the Modules section of Canvas. Each module represents what material and assignments are planned for during the week. Assignment due dates are given in the Assignments section of Canvas. In general, on-line assignments (quizzes, file uploads, etc.) will be due on Sunday one minute before midnight. If you do not see an assignment due on Sunday check Canvas again!

The class schedule is subject to change at any time. Students are to make sure to check Canvas on a regular basis of assignment due dates. If due dates are changed in Canvas, you should receive a notification from Canvas on the new date.

University Information

Disability Statement

The University of Alabama in Huntsville will make reasonable accommodations for students with documented disabilities. If you need support or assistance because of a disability, you may be eligible for academic accommodations. Students should contact the Disability Support Services (https://www.uah.edu/dss) Office (256.824.1997 or Wilson Hall 128) as soon as possible to coordinate accommodations.

Pertinent UAH Policies

- UAH Student Handbook (https://www.uah.edu/dos/office-of-student-ethics-education/handbook)
- Academic Misconduct Policy (https://www.uah.edu/policies/02-01-67-academic-misconduct-policy)
- Complete listing of UAH Policies and Procedures (https://www.uah.edu/policies)

Campus Resources

The University of Alabama in Huntsville offers a range of student services to enhance the experience of students.

- Academic Support Services (https://catalog.uah.edu/undergrad/support-services/academic-support-services/) —ASAP, Student Success Center, Tutoring, PASS, Academic Support Centers by College
- Student Support Services (https://catalog.uah.edu/undergrad/support-services/student-support-services/) —Counseling Center, Disability Support Services, Student Health Services, Office of International Services, Multicultural Affairs, etc.
- UAlert (https://www.uah.edu/ualert) —Sign up for UAH's emergency notification system to receive urgent messages from the university
- Registrar's Office (https://www.uah.edu/registrar) —Academic Calendars, Course Registration, Student Records, Commencement
- Louis Salmon Library (https://www.uah.edu/library) —Printed and Online Resources, Reference Services, Group Study Rooms, AV Resources, Printing
- Office of Diversity, Equity, and Inclusion (https://www.uah.edu/diversity) —Anti-racism resources, LGBTQ resources, lactation rooms, name change requests, internet access assistance, Title IX
- Canvas Support (https://community.canvaslms.com/t5/Student-Guide/How-do-I-get-help-with-Canvas-as-a-student/ta-p/498) —Call 844-219-5802 to report an issue with Canvas.
- OIT Help Desk (https://www.uah.edu/oit/contact) —For technical support, contact the OIT Help Desk (helpdesk@uah.edu (mailto:helpdesk@uah.edu) ; 256.824.3333)

NOTE: When submitting a support ticket include your name, your class, the element/assignment being affected, and a detailed description of the issue. Providing a screenshot (http://www.take-a-screenshot.org/) is often very helpful in diagnosing an issue.

Important Dates

Review the semester dates and deadlines and the academic calendar. (https://www.uah.edu/registrar/calendars)

Subject to Change

Every effort is made to follow the guidelines in the syllabus; however, if needed, the syllabus will be amended. You will be notified if changes are made.

Course Summary:

Date	Details	Due
Sun Jan 14, 2024	Individual Report 01 (https://uah.instructure.com/courses/73398/assignments/831215)	due by 11:59pm
	Team Report 01 (https://uah.instructure.com/courses/73398/assignments/831241)	due by 11:59pm
Tue Jan 16, 2024	(CS 499-03) (SP24) SR PROJ:TEAM SOFTWARE DESIGN (https://uah.instructure.com/calendar?event_id=319437&include_contexts=course_73398)	9:40am to 11am
Thu Jan 18, 2024	(CS 499-03) (SP24) Remote learning 2024-01-18 (https://uah.instructure.com/calendar?event_id=320485&include_contexts=course_73398)	9:40am to 11am
Sun Jan 21, 2024	Individual Report 02 (https://uah.instructure.com/courses/73398/assignments/831216)	due by 11:59pm
	Team Report 02 (https://uah.instructure.com/courses/73398/assignments/831242)	due by 11:59pm
Sun Jan 28, 2024	Individual Report 03 (https://uah.instructure.com/courses/73398/assignments/831217)	due by 11:59pm
	SDP (https://uah.instructure.com/courses/73398/assignments/831231)	due by 11:59pm
	SDP Presentation (https://uah.instructure.com/courses/73398/assignments/831232)	due by 11:59pm
	SDP Video (https://uah.instructure.com/courses/73398/assignments/831233)	due by 11:59pm

Date	Details	Due
	Sprint Team Feedback One (https://uah.instructure.com/courses/73398/assignments/831199)	due by 11:59pm
	Team Report 03 (https://uah.instructure.com/courses/73398/assignments/831243)	due by 11:59pm
Sun Feb 4, 2024	Individual Report 04 (https://uah.instructure.com/courses/73398/assignments/831218)	due by 11:59pm
	Team Report 04 (https://uah.instructure.com/courses/73398/assignments/831244)	due by 11:59pm
Sun Feb 11, 2024	Backlog/Requirements (https://uah.instructure.com/courses/73398/assignments/831204)	due by 11:59pm
	Backlog/Requirements Presentation (https://uah.instructure.com/courses/73398/assignments/831205)	due by 11:59pm
	Backlog/Requirements Video (https://uah.instructure.com/courses/73398/assignments/831206)	due by 11:59pm
	Individual Report 05 (https://uah.instructure.com/courses/73398/assignments/831219)	due by 11:59pm
	Sprint Team Feedback Two (https://uah.instructure.com/courses/73398/assignments/831197)	due by 11:59pm
	Team Report 05 (https://uah.instructure.com/courses/73398/assignments/831245)	due by 11:59pm
Sun Feb 18, 2024	Individual Report 06 (https://uah.instructure.com/courses/73398/assignments/831220)	due by 11:59pm
	Team Report 06 (https://uah.instructure.com/courses/73398/assignments/831246)	due by 11:59pm
Sun Feb 25, 2024	Architectural Design (https://uah.instructure.com/courses/73398/assignments/831201)	due by 11:59pm
	Architectural Design Presentation	due by 11:59pm

Date	Details	Due
	(https://uah.instructure.com/courses/73398/assignments/831202)	
	Individual Report 07 (https://uah.instructure.com/courses/73398/assignments/831221)	due by 11:59pm
	Sprint Team Feedback Three (https://uah.instructure.com/courses/73398/assignments/831196)	due by 11:59pm
	Team Report 07 (https://uah.instructure.com/courses/73398/assignments/831247)	due by 11:59pm
	Architectural Design Video (https://uah.instructure.com/courses/73398/assignments/831203)	due by 11:59pm
Sun Mar 3, 2024	Individual Report 08 (https://uah.instructure.com/courses/73398/assignments/831222)	due by 11:59pm
	Team Report 08 (https://uah.instructure.com/courses/73398/assignments/831248)	due by 11:59pm
	Individual Report 09 (https://uah.instructure.com/courses/73398/assignments/831223)	due by 11:59pm
Sun Mar 10, 2024	Sprint Team Feedback Four (https://uah.instructure.com/courses/73398/assignments/831198)	due by 11:59pm
	Team Report 09 (https://uah.instructure.com/courses/73398/assignments/831249)	due by 11:59pm
	Individual Report 10 (https://uah.instructure.com/courses/73398/assignments/831224)	due by 11:59pm
Sun Mar 17, 2024	Team Report 10 (https://uah.instructure.com/courses/73398/assignments/831250)	due by 11:59pm
Mon Mar 18, 2024	Detailed Program Review (https://uah.instructure.com/appointment_groups/612)	8am to Mar 21 at 3pm
Thu Mar 21, 2024	Team 03 Detailed Program Review (https://uah.instructure.com/appointment_groups/613)	3pm to 4pm

Date	Details	Due
Sun Mar 24, 2024	Detailed Program Review (https://uah.instructure.com/courses/73398/assignments/831208)	due by 11:59pm
	GUI Design Presentation (https://uah.instructure.com/courses/73398/assignments/831213)	due by 11:59pm
	GUI Design Video (https://uah.instructure.com/courses/73398/assignments/831214)	due by 11:59pm
	Individual Report 11 (https://uah.instructure.com/courses/73398/assignments/831225)	due by 11:59pm
	Sprint Team Feedback Five (https://uah.instructure.com/courses/73398/assignments/831200)	due by 11:59pm
	Team Report 11 (https://uah.instructure.com/courses/73398/assignments/831251)	due by 11:59pm
Sun Mar 31, 2024	Individual Report 12 (https://uah.instructure.com/courses/73398/assignments/831226)	due by 11:59pm
	Team Report 12 (https://uah.instructure.com/courses/73398/assignments/831252)	due by 11:59pm
Mon Apr 1, 2024	CS499 Demos (https://uah.instructure.com/appointment_groups/614)	7am to Apr 4 at 4pm
Sun Apr 7, 2024	Individual Report 13 (https://uah.instructure.com/courses/73398/assignments/831227)	due by 11:59pm
	Sprint Team Feedback Six (https://uah.instructure.com/courses/73398/assignments/831195)	due by 11:59pm
	Team Report 13 (https://uah.instructure.com/courses/73398/assignments/831253)	due by 11:59pm
Sun Apr 14, 2024	Individual Report 14 (https://uah.instructure.com/courses/73398/assignments/831228)	due by 11:59pm
	Team Report 14 (https://uah.instructure.com/courses/73398/assignments/831254)	due by 11:59pm

Date	Details	Due
Tue Apr 16, 2024	CS499 Demos Round 2 (https://uah.instructure.com/appointment_groups/616)	8am to 4pm
Thu Apr 18, 2024	CS499 Demos Round 2 (https://uah.instructure.com/appointment_groups/617)	8am to 4pm
Sun Apr 21, 2024	Individual Report 15 (https://uah.instructure.com/courses/73398/assignments/831229)	due by 11:59pm
	Sprint Team Feedback Seven (https://uah.instructure.com/courses/73398/assignments/831194)	due by 11:59pm
	Team Report 15 (https://uah.instructure.com/courses/73398/assignments/831255)	due by 11:59pm
	Final Project Presentation (https://uah.instructure.com/courses/73398/assignments/831211)	due by 11:59pm
Tue Apr 23, 2024	Final Group Presentations Round 1 (https://uah.instructure.com/calendar?event_id=326464&include_contexts=course_73398)	9:40am to 11am
Thu Apr 25, 2024	Final Group Presentations Round 2 (https://uah.instructure.com/calendar?event_id=326463&include_contexts=course_73398)	9:40am to 11am
Sun Apr 28, 2024	Final Evaluation (https://uah.instructure.com/courses/73398/assignments/831193)	due by 11:59pm
	Final Project Delivery (https://uah.instructure.com/courses/73398/assignments/831210)	due by 11:59pm
	Final Project Presentation Video (https://uah.instructure.com/courses/73398/assignments/831212)	due by 11:59pm
	Individual Report 16 (https://uah.instructure.com/courses/73398/assignments/831230)	due by 11:59pm

Date	Details	Due
	Team Report 16 (https://uah.instructure.com/courses/73398/assignments/831256)	due by 11:59pm
	CS Department Exit Survey (https://uah.instructure.com/courses/73398/assignments/831207)	due by 11:59pm
Mon Apr 29, 2024	Final Exam Attendance (https://uah.instructure.com/courses/73398/assignments/831209)	due by 3pm
	Sprint Team Score Five (https://uah.instructure.com/courses/73398/assignments/831234)	
	Sprint Team Score Four (https://uah.instructure.com/courses/73398/assignments/831235)	
	Sprint Team Score One (https://uah.instructure.com/courses/73398/assignments/831236)	
	Sprint Team Score Seven (https://uah.instructure.com/courses/73398/assignments/831237)	
	Sprint Team Score Six (https://uah.instructure.com/courses/73398/assignments/831238)	
	Sprint Team Score Three (https://uah.instructure.com/courses/73398/assignments/831239)	
	Sprint Team Score Two (https://uah.instructure.com/courses/73398/assignments/831240)	

Syllabus **CS 214 (Section 4) Introduction to Discrete Structures** Spring 2022

Class Lecture Meeting Times: MW 6:00-7:20 pm (in TH N 306).

Instructor: Dr. Tim Newman
email: newmant@uah.edu
Office: TH N 364
Phone: (256) 824-6619

Office Hours: MTWR 10-11am

Prerequisite: CS 121 and MA 171

Course Overall Aim: Examine the fundamental discrete mathematical concepts that give a foundational background for later courses in computing. Students are to be able to achieve application of knowledge of these computing and mathematics concepts in ways appropriate to the computing discipline.

Supporting Aims: Establish a sophomore-level, structured thinking capacity about computational underpinings needed for the computing disciplines.

Students are to be able to apply mathematical foundations and computing theory from discrete structures in modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.

Topics Addressed:

- Formal Logic
- Proofs
- Operations on Sets, Relations, and Functions
- Graphs and Trees
- Boolean Algebra
- Finite State Concepts

Text: *Mathematical Structures for Computer Science, 7th Ed.* by J. Gersting, W. H. Freeman, 2014.

Grading: The final grade will be composed of the following weights. The instructor reserves the right to make changes to this system. Any changes will be elaborated at the time.

Activity	**Total Points**
Mid-term Exams (2)	200 pts. total
Final Exam	125 pts.
Programming Assignment*	30 pts.*
Homeworks	80 pts. total*
Participation	25 pts.
Grand Total	460 pts.

* = tentative

Assuming 460 points, the grading scale will be **no stricter than**:

At/Above 415 pts.	for a 4.0;	At/Above 370 pts.	for a 3.0;
At/Above 325 pts.	for a 2.0;	At/Above 306 pts. (>**66.5%**)	for a 1.0;
<306	for a 0.0		

This course will utilize the plus/minus grading system for final grades. Note that a plus or minus grade doesn't affect GPA (e.g., a B- is counted in GPA the same as a B or B+).

Exams: There will be two mid-term examinations, each worth 100 points, currently scheduled for **Mon., Feb. 14** and **Mon., Mar. 28**. The 125 point comprehensive final is at the time the University specifies (currently listed as **Mon., Apr. 25**, from 6:30 pm to 9:00 pm). Tests will cover lectures, assigned readings, homework, and programming assignments. Documented crisis or one week's prior notice required for *consideration* of exam make-up.

All exams will be taken in class. Exams are to represent one's own work; all forms of oral, written, electronic, etc., collaboration/assistance on exams are prohibited.

Programming Assignment: There could be 1 programming assignment in this course. The assignment is to be INDIVIDUAL work. For help on programs, one may utilize only a CS Help Desk/Lab TA or the instructor. All programs need to compile and run using the Visual C/C++ compiler (2017 version of Visual Studio) in the CS PC lab. Programs are always due at the *start* of class on the due date.

Notes on Programming Assignment: Both hardcopy (printout) and softcopy (electronic) versions of our source code will be submitted. More details on the softcopy requirements will be provided later.

All programs are expected to contain a reasonable amount of documentation.

Programs are due at the **start** of the class period on the due date. Late programs will receive a 15% penalty if they are up to one day (0-24 hours) late. No programs more than 24 hours late will be accepted. Please do not delay starting the assignments. Malfunctioning or unavailable equipment, etc., are not reasons that justify lateness.

It's wise to save programs on one's flash stick, compact/digital video disk, or to one's linux home directory at the end of every lab visit.

Homeworks: Regular homeworks will be assigned throughout the term. At least one, and possibly two, homeworks will be due in the last two weeks of class. Up to 9 homework assignments will be made. Homeworks are due at the start of class on the due date. No late homeworks are accepted. Homeworks are to be done on the student's own. However, the Help Desk TA's guidance is available for anyone needing some guidance on homeworks.

Each graded homework is worth 10 points. The lowest homework score will be dropped. Missed homeworks cannot be made up.

In the event we have less than 9 homeworks, the grading schedule shown under "Grading" will be revised.

Pop Quizzes: The instructor reserves the right to have a pop quiz, although only on a date a homework is due. If there are pop quizzes, they won't be pre-announced—they could be on any homework due date, including a date within the last two weeks of the class. If there is a pop quiz, lecture, assigned readings, homework assignment topics, etc., are all fair game. If there are any pop quizzes, there will be a change to the total number of points possible in the course, and students will be notified of that at a class session.

Turn-in Policy: All work is to be turned in to the instructor, preferably at the start of class, otherwise during office hours. Anyone needing to turn in an assignment at a different time during the day may turn it in to one of the department secretaries (**in the CS main office**) during regular working hours (and a time stamp on the assignment requested) and ask said assistant to give the assignment to Professor Newman–it is the student's responsibility to ensure that the secretary time stamps the assignment and receives clear direction to give the assignment to the instructor.) **Lab TAs/help desk staff are not department secretaries.**

Class Meetings, Attendance, and Absence: Students are responsible for all material presented by the instructor, so attendance in person is in the student's best interest whenever a student is well.

At least as we start the semester, this class, because it is a Traditional Format course in the course schedule, will be taught in person. There may be a face masking requirement for part or all of the semester, and students must comply with any such requirement. The instructor may lecture using a face shield in lieu of a mask.

Students are strongly encouraged to take notes during class. Students may also find it helpful to take advantage of the Rocketbook Beacons that the whiteboard is equipped with.

Class attendance and effective, constructive participation is important to performance in the course and **makes up a portion of the grade**. The 25 participation points are based on the instructor's assessment of the **effectiveness and constructiveness** of the student's class meeting participation, with that assessment made at the end of the course. (N.B.: exam absence policy mentioned earlier.)

When one needs help: A liberal amount of office hours have been scheduled and the instructor wants to help students learn the material and to succeed in the course. Students should seek the instructor's assistance for any questions or concerns. The lab assistants at Help Desk are also ready to help with any difficulties on material.

Stick with it!: Some of the things we study in 214 may be new and require expansion of one's way of thinking about computing. Note to students: Don't be discouraged if that happens, even if it seems a bit painful at times—such pains may be "growing pains." :-) If you stick with it, you'll find out in later courses that 214 gave you a good foundation.

Internet Faults: Any Zoom or Panopto recordings that are attempted in this course are always at the mercy of the internet and equipment. The instructor is not responsible for internet or equipment issues that cause glitches or stutters or other breaks/delays in video or audio for any Zoom or Panopto records.

Contact Notes: Students are expected to check email and Canvas messages regularly. Sometimes class updates are distributed by email or by Canvas message. Additionally, any changes to delivery mode due to unexpected interruptions, such as weather, illness, or other factors, will be communicated via Canvas message (or email if Canvas fails); again, Canvas messages and email must be checked regularly.

The instructor tries to check email at the address listed on page one regularly during the work week. Minor issues/questions can often be resolved by email.

UAH CS Department Policies/Accomodations: The official UAH Computer Science Department Policies sheet is incorporated by reference to this syllabus. Among other things, it describes accommodations practices and complaint procedures.

Academic Honesty: Department and class policies are strict on academic honesty; instances of academic dishonesty (including, but not limited to, those described herein) will be penalized, ordinarily by failure of at least the assignment, if not the course (in addition to any Department and/or University penalties). Some elaborations follow, subject to the proviso under Assignment and Project Notes above. Students shall (1) not use other's work or code (**or an approach similar to that of another**); (2) not use any type of resource not listed on this syllabus without first receiving instructor approval; and (3) not supply/give/sell material related to this course to anyone else, unless Dr. Newman explicitly approves that. Again, even following an approach in one's code similar to the approach followed by the code of another is against the course honesty policy. If one wants to use someone else's code or ideas, *one can only do so if it is approved by the instructor in advance and then thoroughly documented in the listing. All work submitted must be the student's own work!*

All students are expected to abide by the required UAH pledge:

I promise or affirm that I will not at any time be involved in cheating, plagiarism, fabrication, misrepresentation, or any other form of academic misconduct as outlined in the UAH Policy on Academic Misconduct and Student Handbook while I am enrolled as a student at UAH. I understand that violating this promise will result in penalties as severe as expulsion from UAH.

Conduct: The Syllabus page in Canvas for this course has some pointers on netiquette.

While questions and answers to questions during class are encouraged and welcomed during class sessions, no student should overly monopolize the class. If asked to hold a question, students do need to do so until an appropriate other time.

Conversations between students during class lecture are not to take place. While electronic devices are okayed for note-taking during class, cell phones must be silenced and cell calls may not be taken in-class during class; please leave the room to take any cell calls. (See next note about arriving/departing class, though.)

It is possible that seat assignments and/or changes will be made during class sessions.

Students not complying with the instructor's conduct requests may be asked to leave the classroom and/or lose a class privilege (e.g., related to carrying a cellular device during class).

UAlert Emergency Notification System: UAH has implemented the UAlert emergency notification system. UAlert allows one to receive time-sensitive emergency messages in the form of e-mail, voice mail, and text messages.

Everyone who has a UAH e-mail address will receive emergency alerts to their campus e-mail address. In order to also receive text and voice message alerts, each student is asked to provide up-to-date phone contact information. Participation in UAlert text and voice messaging is optional, but enrollment is strongly encouraged. One can't be reached through UAlert unless one participates. The information supplied is considered confidential and will not be shared or used for purposes other than emergency notification.

To review one's UAlert account, add or update phone and alternate e-mail addresses, or set the priority for the contact methods, one may visit the UAlert web site: http://ualert.uah.edu.

Software Tools Privacy Policies: This class makes use of the typical Canvas tools and plug-ins. Each of those has its own privacy policy, which interested students may seek out. (Links to those are not explicitly provided here as they are tools licensed by UAH.) This class also makes use of Unity and Visual Studio, which are also licensed by UAH. Since those may not have been encountered in other classes, their privacy policy links as of Aug. 18, 2021 are provided here:

`http://unity3d.com/legal/privacy-policy`

`http://privacy.microsoft.com/en-us/privacystatement` .

Copyright: All copyrights of all types are reserved by the instructor for lectures and course material. Students may take notes for personal use but for no other purpose.

Lectures may not be recorded or redistributed. Commercial use of lectures/material is prohibited. Lectures/ material cannot be provided to those not currently enrolled in this course without the prior written permission of the instructor.

Any copyright protected material produced by others used in the course, including text materials, images, audio, and video, are used under the Fair Use doctrine. As such, they must not be copied, duplicated, downloaded or distributed by the student. Such materials can be used by the student for this course's purposes but nothing else.

Tentative Class Outline: The intended schedule of the class follows. This list is subject to change.

Spring 2022 CS 214 (04) MW 6:00 Class Tentative Schedule

Date		Topic	Reading Assignment	Special Comments
Mon.	1/10	Intro. and Logic Statements and Truth	Ch. 1.1	
Wed.	1/12	Propositional Logic	Chs. 1.1 and 1.2	
Mon.	1/17	MLK Day; NO CLASS	re-read 1.1-1.2	
Wed.	1/19	Determining Validity	Ch. 1.3	
Mon.	1/24	Validity and Proof Tech. I	Ch. 1.3 and 2.1	Drop w/Refund Deadline
Wed.	1/26	More about Proofs, Induction	Ch. 2.1 and 2.2	
Mon.	1/31	Induction and Recursion	Ch. 2.2 and 3.1	
Wed.	2/2	Recurrences and Recur. Relations	Ch. 3.1 and 3.2	
Mon.	2/7	Recur. Relations and Sets	Ch. 3.2 and 4.1	
Wed.	2/9	Recurrences and Sets	Ch. 3.2 and 4.1	
Mon.	2/14	**TEST 1**	Covers thru Chap. 4.1	**TEST 1**
Wed.	2/16	Sets	Ch. 4.1	
Mon.	2/21	Counting	Ch. 4.2	
Wed.	2/23	Counting and Inclusion/Exclusion (I/E)	Ch. 4.2 and 4.3	
Mon.	2/28	I/E, Pigeon., and Permutations	Ch. 4.3 and 4.4	
Wed.	3/2	Perm., Combos. and Prob.	Ch. 4.4 and 4.6	
Mon.	3/7	Probability and Binomial Thm.	Ch. 4.6 and 4.5	
Wed.	3/9	Bin. Thm. and Relations	Ch. 5.1	
Mon.	3/14	Spring Break; NO CLASS	re-read 4.1-4.6, 5.1	
Wed.	3/16	Spring Break; NO CLASS	re-read 4.1-4.6, 5.1	
Mon.	3/21	Rel. and Topo. Sorting	Ch. 5.2	
Wed.	3/23	Functions (and Mod.?)	Ch. 5.4 (and 5.6?)	
Mon.	3/28	**TEST 2**	Covers 4.2 to 5.6	**TEST 2**
Wed.	3/30	Mod and Matrices	Ch. 5.6 (and 5.7 ?)	
Mon.	4/4	Matrices	Ch. 5.7	
Wed.	4/6	Graphs	Ch. 6.1	
Mon.	4/11	Graphs and Trees	Ch. 6.1 and 6.2	
Wed.	4/13	Trees, Graph Algs. (+ Huffman?)	Ch. (6.4? and) 7.1	
Mon.	4/18	Graph Alg. (+ Boolean Algebra?)	Ch. 7.1 (and 8.1 ?)	
Wed.	4/20	FSAs (+ Algebraic Structures?)	Ch. 9.3 (and 9.1?)	
Mon.	4/25	**FINAL**	Covers Chaps. 1-9	currently: 6:30-9:00pm

if time: Sections 6.4 (Huffman Codes), 8.1 (Boolean Algebra), and 9.1 (Algebraic Structures)

CS317-01: INTRO DESIGN/ANALYSIS OF ALGORITHMS

Course Information

Contact

Instructor: Beth Allen
Office: OKT N300G
Email Address: beth.allen@uah.edu
Phone Numbers: 256-824-5320
Availability/Office Hours: http://www.cs.uah.edu/~mea0010/ (corrected link)

Details

Course Name: CS317 Intro Design/Analysis of Algorithms
Mode of Delivery: Traditional
Credit Hours: 3
Semester/Year: Spring 2024
Meeting day, time, and location: TR 9:40-11:00am, LIB 205
Prerequisites: MA 171, MA 244 and CS 214, and either CS 221 or CPE 212

Overview

Description: Introduction to complexity analysis of algorithms; emphasis on searching, sorting, finding spanning trees and shortest paths in graphs. Design techniques such as divide & conquer, dynamic programming, and backtracking. Introduction to problem classification; i.e. NP, intractable, and unsolvable.

Objectives

Upon completion of this course, the student will be able to:

- Understand asymptotic growth rate and analyze the time complexity of algorithms.
- Design algorithms to problems using basic algorithm design strategies such as decrease/divide and conquer, greedy method, dynamic programming, etc.
- Verify and/or prove the correctness and complexity of algorithms using mathematical induction and/or deductive reasoning.
- Comprehend complexity classes such as P & NP
- Apply knowledge of computing and mathematics appropriate to the computer science
- discipline.

- Apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.
- Understand the tradeoffs involved when developing algorithms that make decisions based on ethical practices.

Materials

Required

- Introduction to the Design and Analysis of Algorithms, 3rd edition, Anany Levitin. (ISBN-13: 978-0-13-231681-1). Do not purchase the international edition. If I assign homework problems, some of them are different in those editions.

Technology Statement

Software Requirements

You need an account to use the CS department computers. Apply online at http://www.cs.uah.edu/account/

This course may include programming assignments to be developed in languages such as C++ and/or Java. The instructor will provide information about required environments along with the assignments.

This course will use UAH's learning management system, Canvas, as well as other technology tools. Students will be expected to have access to a computer with internet capabilities in order to fully participate in this course.

Assuming the equipment in the classroom is functional, I attempt to record my lectures for students who have no choice but to miss a class. If you miss classes, with a valid excuse, you may request access to the missed lectures. Please note, video recordings are unable to duplicate the in-class learning experience, and sometimes, the recording technology may fail.

Evaluation and Grading

The following grading scheme will apply in this course:

A = 90% - 100%
B = 80% up to <90%
C = 70% up to <80%

D = 60% up to < 70%
F = 0% up to < 60%

Evaluation and grading will be based upon weighted assignment groups.

Assignment Types You'll See in this Class	What to Expect	%
Homework	There will be several homework assignments, given periodically through the semester. All assignments are due at the beginning of the class on the due date. Because we often review solutions to homework in class, no late assignments can be accepted.	10%
Programs	Two or three short programming assignments will be given during the semester.	10%
Tests	Three traditional, in person, closed book, closed note tests are given throughout the semester.	50%
Final Exam	The Final Exam will be a comprehensive final and will cover all of the topics and materials in this course. You will be expected to recall information without access to your notes.	30%

Missed Assignments/Make-Ups/Extra Credit

Because we often review solutions to homework in class, no late assignments can be accepted, once solutions have been posted or reviewed. Some makeup work may be given when there is an unavoidable extenuating circumstance that necessitates extra time. This may include an illness, other than minor situations, an accident, a family emergency. Documentation may be required to obtain makeup work.

If you will miss a test or a test deadline, you must notify me in advance with a valid excuse, to be allowed to make up the test. If a makeup test must be given, it may be a different exam than the original test.

Attendance Policy

When you miss class, you miss important information. If you are absent, you are responsible for learning material covered in class. If you are absent when an assignment is due, you must have submitted the assignment prior to the due date to receive credit. Please contact your instructor if you have specific questions or concerns.

Communication & Instructional Continuity

In this class, the official mode of communication is through either Canvas or UAH email. Students can expect a response from the instructor within a 2 business days time frame.

In the event a regular scheduled course is unexpectedly interrupted, course requirements, due dates, and grading policy are subject to change when necessitated by revised course delivery, semester calendar, or other instances. Information about changes in this course can be obtained from the Canvas course webpage or by contacting me. If I do not respond within 2 business days, please contact my department at cschair@uah.edu or the college assistant dean at science.adean@uah.edu.

If our regular scheduled class meeting is interrupted or the campus should unexpectedly close, students should immediately log onto Canvas and read any course announcements. Students are encouraged to continue the readings and other assignments as outlined on the course syllabus until otherwise advised. Any student who does not could fall behind in the course.

Course Conduct

All students must treat others with civility and respect and conduct themselves in a way that does not unreasonably interfere with the opportunity of other students to learn. All communication between student/instructor and between student/student should be respectful and professional.

Whether we are using Canvas discussions or informal group communications tools, I expect you to adhere to my guidelines for Netiquette in online forums:
www.cs.uah.edu/~mea0010/netiquette.html

Academic Honesty

Academic Integrity is of utmost importance to me and any professional I work with. Therefore, I do not tolerate academic dishonesty in my courses. Academic dishonesty can be defined as

receiving (or providing) unauthorized assistance on any graded assignment, program, quiz or test. This includes, but is not limited to, working with another person on a programming assignment, copying test answers from other papers, attempting to use electronic media of any sort during a closed exam, copying work from outside sources such as websites, books, AI tools, etc.

You are here to learn how to be a software professional. Cheating will not help you develop and hone your skillset. It is not in your best interest to take short cuts, nor is it fair to those students who do not.

I have a zero tolerance policy for academic dishonesty in my classes. You will receive a zero grade for any assignment, program, quiz or test on which you cheat. If a second offense occurs in my class, you will receive an F in the course.

To ensure that you are aware of what is considered academic misconduct, you should review carefully the definitions and examples provided in the Student Handbook. If you have questions in this regard, please contact me without delay.

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Discussion of Concerns

If you have difficulties or concerns related to this course, your first action should be to discuss them with your instructor. If such a discussion would be uncomfortable for you or fails to resolve your difficulties, you should contact the Computer Science Department Chairperson, Dr. Letha Etzkorn at cschair@uah.edu. If you are still unsatisfied, you should contact Dr. Terri Johnson, Assistant Dean for UG Affairs, College of Science, at science.adean@uah.edu.

College/Department Information

Computer Science (CS) has a set of general policies issued by the CS department. The policies are at https://www.uah.edu/science/departments/computer-science/cs-policies. Individual

courses may have additional policies that your instructor will enforce, in addition to these departmental policies.

Class Schedule

The following is an approximate outline of the course schedule. Tests and major assignments will be due on or near the dates provided in the schedule.

Date	Topics Covered	Reminders/Tentative Work Due	Alignment/Course Objectives
Week 1	Chapter 1: Intro to Algorithms, Review of Data Structure Defs		
Week 2	Ch 2, sections 1 - 4		
Week 3	Ch 2, section 5 Ch 3, sections 1-2	Hwk 1 due (approx)	
Week 4	Ch 3, sections 3-4		
Week 5	Ch 3, sections 4-5 Review for Test 1	Hwk 2 due **TEST 1, February 8**	
Week 6	Ch 4, sections 1-2		
Week 7	Ch 4, sections 3-4 Ch 5, sections 1-2	Hwk 3 due	Assign program 1
Week 8	Ch 5 sections 2-3		
Week 9	Ch 5, sections 3-4 Ch 6, section 1	Hwk 4 due **TEST 2, March 5**	
	SPRING BREAK NO CLASS	Week of March 11	
Week 10	Ch 6 sections 2-4		
Week 11	Ch 7, sections 1, 3 Ch 9, section 1	Hwk 5 due	
Week 12	Ch 9, sections 2-3 Ch 8, sections 1-2	Hwk 6 due Assign program 2	Program 1 due Assign program 2
Week 13	Ch 12, section 1, N Queens Ch 12, section 2	**TEST 3, April 9**	
Week 14	Ch 7, section 4	Hwk 7 due	
Week 15	Ch 11, P and NP problems	Hwk 8 due (if applicable)	Program 2 due

Final	**Thursday, May 2 8:00am – 10:30am**	See UAH Schedule

University Information

The text contained between the lines is provided by the university each semester and should NOT be edited. When posting the syllabus on the Syllabus page in Canvas, you should delete the text between the lines as it will automatically appear on the Canvas Syllabus page.

Disability Statement

The University of Alabama in Huntsville will make reasonable accommodations for students with documented disabilities. If you need support or assistance because of a disability, you may be eligible for academic accommodations. Students should contact the Disability Support Services Office (256.824.1997 or Wilson Hall 128) as soon as possible to coordinate accommodations.

Pertinent UAH Policies

- UAH Student Handbook
- Academic Misconduct Policy
- Complete listing of UAH Policies and Procedures

Campus Resources

The University of Alabama in Huntsville offers a range of student services to enhance the experience of students.

- Academic Support Services—ASAP, Student Success Center, Tutoring, PASS, Academic Support Centers by College
- Student Support Services—Counseling Center, Disability Support Services, Student Health Services, Office of International Services, Multicultural Affairs, etc.
- UAlert—Sign up for UAH's emergency notification system to receive urgent messages from the university
- Registrar's Office—Academic Calendars, Course Registration, Student Records, Commencement
- M. Louis Salmon Library—Printed and Online Resources, Reference Services, Group Study Rooms, AV Resources, Printing
- Office of Diversity, Equity, and Inclusion—Anti-racism resources, LGBTQ resources, lactation rooms, name change requests, internet access assistance, Title IX

- Canvas Support—Call 844-219-5802 to report an issue with Canvas.
- OIT Help Desk—For technical support, contact the OIT Help Desk (helpdesk@uah.edu; 256.824.3333)

NOTE: When submitting a support ticket include your name, your class, the element/assignment being affected, and a detailed description of the issue. Providing a screenshot is often very helpful in diagnosing an issue.

Important Dates

Review the semester dates and deadlines and the academic calendar.

Subject to Change

Every effort is made to follow the guidelines in the syllabus; however, if needed, the syllabus will be amended. You will be notified if changes are made.

CS521 Programming Topics

Date	Topics Covered	Reminders	Alignment/Course Objectives
Week 1	• Introduction to computing hardware and number systems (binary, octal, hex) • Installing programming IDE(s) • Using GIT repositories for project management and code versioning		
Weeks 2-5	Fast-paced instruction in programming logic (Language: C++) To include: • Variables, data types, expressions • Control structures, decisions, repetition • Functions and parameters • File I/O • Debugging tools		
Weeks 6-8	• Software Engineering Lifecycle, Object Oriented design techniques • Transitioning to Programming with Objects • Advanced Object Oriented concepts		
Weeks 9-11	• Memory Management • Programming with dynamic memory allocation • The pointer type vs the reference type • Introduction to abstract data types • Lists, linked lists, queues, stacks and trees		

Weeks 12-14	• UML Introduction • Exploring other languages • GUI programming in Java. Java's data structures library • Design patterns and UML		