

CSCI 1470: Computer Science I

Section 14344 – Fall 2015

MW 4:00-5:15 pm, MCS 329, T 2:40-4:30 MCS 339

Instructor: Clarence Burg

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Final Exam: 4:00-6:00 pm, Monday, December 7, 2015

Office Hours: MWF 10:00-10:50 am, TTh 9:25-10:40 am

Prerequisites: Math 1390 (College Algebra).

Required Text: Starting Out With C++, 7th Edition, by Tony Gaddis, Pearson publishers.

Catalog Description: An introductory course for computer science majors and minors with major emphasis on problem solving and programming. The programming component covers data types, input/output statements, control statements, pointers, subprograms and functions, and structures.

Course Objectives: Through this course, students will gain an initial ability to analyze a problem, and to identify and to define the computing requirements appropriate to its solution; they will also gain an ability to use techniques, skills and tools necessary for computing practices. Specifically, this course introduces problem solving and computer programming with the C++ programming language. Upon completion, students should

1. Be able to analyze a problem by specifying its inputs and outputs and to divide a main task into logical and manageable subtasks; Supports Program Outcome (b);
2. Be able to design an appropriate solution for each subtask and then to combine them into an integrated solution to solve the problem; Supports Program Outcome (b);
3. Be able to implement the design solution into a computer program in C++ with proper selections of data types (simple data type, array and class object) and operations including I/O, arithmetic and/or logical operations, branching, iteration and functions; Supports Program Outcome (b);
4. Be able to test and refine an implementation through debugging and result verification. Supports Program Outcome (i).

Computer Science Program Outcomes. This course contributes to the students' ability to demonstrate:

1. Outcome (b): An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution;
2. Outcome (i): An ability to use current techniques, skills, and tools necessary for computing practices.

Assignments, exams and course grade:

Class Participation, In-class Assignments and Homework (10%): Class attendance is required. Students shall be assigned in-class work and/or homework on a regular basis.

Quizzes (10%): We will have a quiz each Wednesday over the material covered in class.

Lab Assignments (30%): You will be expected to complete lab assignments each week. The lab assignments involve problem analysis, solution design, computer implementation, and solution verification which appropriately reflect the techniques covered in class. Lab assignments shall be completed *individually* and submitted on the due date.

Individual Programming Project (10%) There shall be one programming project designed to test the knowledge attained through classroom and laboratory instruction. This shall test your knowledge and skills on problem solving, solution design and implementation up to that point in the course. The programming projects shall be *individual-effort*.

Late Policy: Homework, lab assignments and individual programming projects shall be submitted on the date due. Past due assignments may be accepted, at the discretion of the instructor, with a penalty. No late assignments will be accepted after solutions to that assignment have been posted.

Two Semester Exams (10% each): Scheduled approximately around the 5th and the 10th week. They will test your knowledge and skills on problem solving, solution design and implementation up to that point in the course. In addition to regular questions and answers, these exams shall require you to solve provided problem(s) in programming.

Final Exam (20%): The final exam will test your ability of applying the knowledge learned in this course this semester for problem analysis, solution design, and appropriate computer implementation. In addition to regular questions and answers, these exams shall require you to solve problems with verified computer implementations.

Grading: Grades will be based on the standard 10 point scale (A – 90-100%, B – 80-89%, C – 70-79%, D – 60-69%, F – below 60%). The grade will be determined from homework, quizzes, projects, tests and a final exam.

Homework/Classwork	10%
Quizzes	10%
Lab Assignments	30%
Tests (2@10% each)	20%
Programming Project	10%
Final Exam	20%
Total	100%

Attendance and Withdraw Failing Policy: Attendance is required. If the instructor determines that the student has intentionally stopped attending class (i.e., missing classes, missing exams and not informing instructor about the reason), then the student will be dropped. Absences for officially sanctioned university activities are allowed – please inform the instructor prior to these absences.

Course Content: The following topics will be studied:

1. **Introduction to problem solving and programming in C++:** basic concepts of problem solving such as identifying I/O, divide and conquer, flowchart, top-down and bottom-up; the basics of a C++ program such as structure, syntax, data and data types, variables, constants, simple and compound statements, library functions; and skills of entering, compiling, debugging and running a C++ program with MS Visual Studio 2008.NET. Textbook: Chapters 1 - 3 (1st - 2nd week)
2. **Problem solving with control structures:** Branching with conditions such as selection control, *if* statement and nested *if* statements, *switch*, relational operators, logical operators and logical expressions, Repetition with looping which includes *while* statement, count-controlled loops, event-controlled loops, *do-while*, *for*, *break* statements, nested loops. Textbook: Chapters 4 and 5 (3rd - 6th week)
3. **Problem solving with user-defined functions:** function declarations and definitions, function call, value and reference parameters, formal and actual parameters, local variables, scope rules, and the lifetime of a variable. Textbook: Chapter 6 (7th - 8th week)
4. **Problem solving with arrays and strings:** built-in data types, user-defined types such as enumeration types, named and anonymous data types, one- and two-dimensional arrays, initialization, accessing, searching, sorting, strings and string class library. Textbook: Chapters 7 and 10 (9th - 11th week)
5. **Problem solving with structured data types:** structures, and array of structures. Textbook: Chapter 8, 9, and 11 (12th -14th week)
6. **Problem solving with graphics:** Static graphics using shape primitives and bitmap images. Dynamic graphics and animation using keyboard/mouse event handlers (during the semester)

Tentative Lecture Schedule

Week	Dates	Lecture Topic	Chapter	Lab
1	Aug. 24-26	Output, data types, basic operators Variables and declarations	1 and 2	Lab 1
2	Aug. 31-Sept. 2	Input, formatted output, assignment Statements, math/graphics library	3	Lab 2
3	Sept. 8-9	Selection (if-else and switch statements)	4	Lab 3
4	Sept. 14-16	Graphics library/static graphics, While loops, intro to animation	4	Lab 4
5	Sept. 21-23	Animation continued, do and for loops	5	Lab 5
6	Sept. 24-30	Nested for loops	5	Lab 6
7	Oct. 5-7	Functions – pass by value, return by value Keyboard Events	6	Lab 7
8	Oct. 12-14	Keyboard Events continued Functions – pass by reference	6	
9	Oct. 19-21	One dimensional arrays, mouse click events	7	Lab 8
10	Oct. 26-28	One dimensional arrays, sorting Mouse drag events	7	Lab 9
11	Nov. 2-4	Two dimensional arrays	7	Lab 10
12	Nov. 9-11	Strings	10	Lab 11
13	Nov. 16-18	Pointers and Structures	9 and 11	Lab 12
14	Nov. 23-24	Pointers and Structures continued	9 and 11	
15	Nov. 30-Dec. 2	Search and Sort, basic file input/output	8	

University policy on Academic Integrity and Academic Misconduct: The University of Central Arkansas affirms its commitment to academic integrity and expects all members of the university community to accept shared responsibility for maintaining academic integrity. Students in this course are subject to the provisions of the university's Academic Integrity Policy, approved by the Board of Trustees as Board Policy No. 709 on February 10, 2010, and published in the *Student Handbook*. Penalties for academic misconduct in this course may include a failing grade on an assignment, a failing grade in the course, or any other course-related sanction the instructor determines to be appropriate. Continued enrollment in this course affirms a student's acceptance of this university policy.

Plagiarism: Plagiarism can be defined as the use of someone else's words without proper acknowledgement of that use. If you use someone else's words or the written words of the instructor in the assignment, you must put them in quotations and provide a reference for the source. Paraphrasing the words of others by only changing a few words is also considered plagiarism. For more information about plagiarism, please see UCA's statement on plagiarism at <http://uca.edu/academicaffairs/files/2012/08/Plagiarism.pdf>. Plagiarism is academic misconduct and will result in appropriate disciplinary action.

The Americans with Disabilities Act statement: The University of Central Arkansas adheres to the requirements of the Americans with Disabilities Act. If you need an accommodation under this Act due to a disability, please contact the UCA Disability Resource Center, 450-3613. If the instructor of this class needs to be informed of your disability in order to assist with any appropriate accommodations, please contact the instructor during the first week of classes.

Building Emergency Plan statement: An Emergency Procedures Summary (EPS) for the building in which this class is held will be discussed during the first week of this course. EPS documents for most buildings on campus are available at <http://uca.edu/mysafety/bep>. Every student should be familiar with emergency procedures for any campus building in which he/she spends time for classes or other purposes.

The Title IX disclosure: If a student discloses an act of sexual harassment, discrimination, assault, or other sexual misconduct to a faculty member (as it relates to "student-on-student" or "employee-on-student"), the faculty member cannot maintain complete confidentiality and is required to report the act and may be required to reveal the names of the parties involved. Any allegations made by a student may or may not trigger an investigation. Each situation differs and the obligation to conduct an investigation will depend on those specific set of circumstances. The determination to conduct an investigation will be made by the Title IX Coordinator. For further information, please visit: <https://uca.edu/titleix>. **Disclosure of sexual misconduct by a third party who is not a student and/or employee is also required if the misconduct occurs when the third party is a participant in a university-sponsored program, event, or activity.*

Departmental Policy: Use of cell phones (including texting), MP3 players, web browsers, ear buds/plugs is NOT ALLOWED during class time. Cell phones must be set to silent/vibrant mode while in class. Instructors may also disallow use of any other technology not relevant to the instruction. Use of any type of laptop during class time requires consent of the instructor.

Other Policies: Students should familiarize themselves with all policies listed in the UCA *Student Handbook*, such as the Sexual Harassment Policy and Academic Policies.

Lab Assignments

In-class Labs:

1. In-class labs **must** be worked on **during** your assigned lab time. Labs completed before or after the assigned lab time will not be accepted and the student automatically forfeits any points given to that lab.
2. Due to the limited quantity of computers in the lab, you **must** attend the lab section you are registered in. Laptops are welcome.

Out-of-class Labs:

1. All out-of-class assignments **must** be submitted via **Piazza.com** before the due date and time of the assignment. The Internet being “down” is not a valid excuse. It is highly recommended not to wait until the last minute to submit your assignments. Past due assignments may be accepted, at the discretion of the instructor, with a penalty. No late assignments will be accepted after solutions to that assignment have been posted.
2. Only electronic submissions will be accepted. There will be an out-of-class lab assignment due every week of the semester.
3. If it is necessary for a student to be absent, it is still his/her responsibility to submit all assignments when due and learn of any changes in assignment due dates, schedule changes, etc.
4. All lab assignments must be done on an **individual basis**. Any duplicated code submitted will result in **all** parties involved being dismissed from the course and **assigned an “F” at the end of the semester**. **This will be strictly enforced**, whether the assignment is worth 5 points or 100 points. It is highly recommended to always delete your code from any of the computers used on campus after making a backup copy
5. Students should always make a backup copy of assignments in case they are asked to resubmit their work due to occasional technical problems.
6. In case of a discrepancy in recorded grades, it is suggested that each student keep a portfolio of his/her graded work.

Exams

1. Missing an exam is a very serious matter. There are **only** 2 valid reasons for missing a test:
 - a. An illness which requires a doctor's care and you **must** provide documentation from your physician. The physician's name and phone number is required to be on the documentation.
 - b. A **documented** family emergency such as a death or surgery.
2. Make-up test will be conducted at the instructor's discretion.
3. All final exams **must** be taken at the assigned time in the semester schedule.
4. No cell phones will be allowed on your desk during any exam. You are not allowed to use your cell phone as a calculator. You may use the calculator program on your computer.
5. Lecture exams will be returned to the students for viewing purposes. To avoid exams being copied and distributed to future students, the exams **must** be returned before leaving class the day of distribution. If a student leaves the classroom with his/her exam, they will receive a zero for that exam score.