

Course Syllabus

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CS1400 - Computer Science I

Course Number and name: CS1400 - Computer Science I

Credits: 3

Class Meets:

Section 001: MWF 8:30-9:20, room Fine Arts-Visual 150

Section 002: MWF 10:30-11:20, room VSB 130

Section 003: TR 1:30-2:45, room Fine Arts-Visual 150

Course Fees: Associated with this class is a class fee of \$80.00. The monies from this fee are used to help pay for the instructors, tutors, and lab consultants.

Instructors:

Section 001:

Dr. Jacob Christensen

Email: jacob.h.christensen@gmail.com

Office Hours: By appointment only

Section 002:

Apoorva Chauhan

Email: apoorva.chauhan@aggiemail.usu.edu

Office Hours: MWF 12-1 Main 423

Section 003:

Bryan Hansen

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Office Hours: By appointment only

Section Leaders:

Aaron Fine

Email: fine.aaron@gmail.com (<mailto:fine.aaron@gmail.com>)

Lab Sections: 7,14,18

Dane Carter

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Lab Sections: 1,2

Francisco Arrieta

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Lab Sections: 4,5

Gordon Fjeldsted

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Lab Sections: 16,17

Laurel Stewart

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Lab Sections: 9,10

Bridget Lundahl

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Lab Sections: 15,18

Michael Kamerath

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Lab Sections: 6,8

Haley Manning

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Lab Sections: 12,13

TJ Ferrell

Email: tj.ferrell@gmail.com (<mailto:tj.ferrell@gmail.com>)

Lab Sections: 3,11

Textbook: Starting Out with C++ (9th Edition) by Tony Gaddis et al, published by Pearson. You may use older versions of the text if you wish. We will be assigning problems out of the 9th edition. I have provided a .pdf of all the problems we are using in the 9th edition.

ISBN-13: 978-0-13-440024-2

Catalog Description: Introduction to science of problem solving, programming, program development, algorithm analysis, and data structures. Students will learn to develop correct software in a current programming language environment. Computer science majors must enroll in CS 1405 concurrently with CS 1400. Prerequisite: Grade of C- or better in MATH 1050 or Math ACT score of at least 25. (F,Sp,Su)

3.000 Credit hours

3.000 Lecture hours

Prerequisites: C- or better in Math1050 or Math ACT of at least 25. Computer Science majors must take CS1405

concurrently with CS1400. This course is required for all Computer Science majors.

Course Objectives:

objective	level of proficiency	evaluation method
Data types	mastery	programming assignments, quizzes, exams
Conditional operations	mastery	programming assignments, quizzes, exams
Looping structures	mastery	programming assignments, quizzes, exams
Functions	mastery	programming assignments, quizzes, exams
Classes and objects	mastery	programming assignments, quizzes, exams
Arrays	mastery	programming assignments, quizzes, exams

Student Outcomes: This course supports the following student outcome(s) for the CS program:

- (c) An ability to design, implement, and evaluate a computer-based system, process, component or program to meet desired needs

Brief List of Topics to be covered:

1. Intro to C++
2. Variables, Literals, and Assignment Statement
3. Identifiers
4. Integer Data Types
5. Floating-Point Data
6. Scope
7. Functions
8. Expressions
9. Looping
10. Classes and Objects

ADA statement: Students with ADA-documented physical, sensory, emotional or medical impairments may

be eligible for reasonable accommodations. Veterans may also be eligible for services. All accommodations are coordinated through the Disability Resource Center (DRC) in Room 101 of the University Inn, (435)797-2444. Please contact the DRC as early in the semester as possible. Alternate format materials (Braille, large print, digital, or audio) are available with advance notice.

Academic Dishonesty: This course adheres to the cheating policy for courses in the Department of Computer Science posted on the bulletin board outside the CS office on the 4th floor of Old Main and posted online at <http://cs.usu.edu/htm/cheating-policy/>. Cheating on assignments or exams in any form will not be tolerated. Negative point values, failure in the course, and academic expulsion are possible consequences of academic dishonesty. I *will* file an Academic Integrity Violation Form with the dean of the college and student services as a matter of course for all cheating instances. Did you know that students caught cheating can NEVER be hired by the department as a TA or grader or tutor or consultant?

You are expected to do your own work on all programming assignments. Group work and use of any outside source is expressly forbidden. Late assignments are not accepted. In the case of copied work, no distinction is made between the one who copies and the one who is copied from. You are responsible and required to see that no one has access to your work.

Attendance: It is important to attend all lectures; you never know what is going to happen there, but attendance is not recorded and by itself does it not have an impact on grades. You are responsible for any material presented or announcements made in class. If you miss a class, please talk to someone else to find out what you missed -- not the instructor.

Course Handouts: This is a 100% paperless course. Syllabus, class schedule, chapter notes, program assignments, special announcements... even exams will be made available via Canvas or iNetTest.

Exams: There are three exams. Each exam emphasizes material covered in class since the previous exam; however, because the material for each exam builds on previous material, each exam can be considered comprehensive. Even for exams, students are responsible for material covered in prerequisite courses. Exams will be administered at the USU TarLab in ESLC 131 at various times throughout the semester.

The dates of the exams are:

Exam 1: Feb 6-10

Exam 2: Mar 27- Apr 1

Final Exam: May 1-5

Homework Assignments: There are weekly programming assignments throughout the semester. Each assignment is worth 10-20 points. Because electrons are easy to recycle, all homework will be submitted via Canvas. Homework assignments are generally due on Tuesday at midnight.

Reading Assignments: There is a reading assignment each week. Please have all the material for that week read before class begins on Monday. Reading assignments are not tested, recorded, or graded. They are purely for your edification.

Programming Challenges: There is a programming challenge assignment each week, consisting of

problems from the text. Please take time during the week to sit down with your computer and do them. Programming challenge assignments are not tested, recorded, or graded. They are purely for your edification.

Lab: 15% of your grade in CS1400 is determined by your CS1405 Lab. Your letter grade in CS1405 will be set to your CS1400 grade at the end of the semester.

Re-grading: Your grades will be available through Canvas. If you want to dispute a score, please contact the course TA that graded your assignment quickly via email or at their office hours. If that does not produce an acceptable result, then you may discuss it with your instructor. This contact must be made within one calendar week of when the score is sent to you. Changes will not be considered after that first week.

Tutors: In addition to the section leaders assigned to this course, there are CS tutors available for your use at no charge. They are available in the tutor lab, Main 419, and are open most days and evenings. They are very cognizant of the assignments in this class, and you are encouraged to use them.

Grading:

Expressed as a percentage, the three exams are collectively worth 45% of your grade, the homework is worth 40% of your grade, and the CS 1405 lab is worth 15% of your grade. **If greater or fewer points exist in any category (such as if an assignment is cancelled or added), the percentages of 45% for exams, 40% for assignments, and 15% for the lab shall remain in effect.**

Each student determines her or his own grade by their performance on assignments and exams. A final grade of 90% or better guarantees a final grade of A. A final grade of 80%-90% guarantees a final grade of B, etc.

Extra Credit: No extra credit is available. Don't ask.

Incompletes: Incompletes are given only in the most extenuating of circumstances. Poor academic performance is not considered justification for an incomplete. Besides, incompletes almost never work out. Most of the time, it just turns into an F.

Late Adds: The last day to add this class is January 30th. Attending this class beyond that date without being officially registered will not be approved by the Dean's Office. Students must be officially registered for this class. No assignments or tests of any kind will be graded for students whose names do not appear on the class list.

Drop Dates: The last day to drop classes is

Jan 30 - without a "W" notation on transcript.

Mar 23 - with a "W" notation on transcript.

Detailed Topic List:

Week 1

Jan 9 - Jan 13

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2.1 the parts of a c++ program

- 2.2 the cout object
- 2.3 the #include directive
- 2.4 variables and the assignment statement
- 2.5 literals
- 2.6 identifiers
- 2.7 integer data types
- 2.8 floating-point data types
- 2.15 arithmetic operators

Week 2

Jan 16 - Jan 20

//No class on Jan 16 (Martin Luther King, Jr. Day)

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- 3.1 the cin object
- 3.2 mathematical expressions
- 3.3 data type conversion and type casting
- 4.1 relational operators
- 4.2 the if statement

Week 3

Jan 23 - Jan 27

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- 4.3 the if/else statement
- 4.4 the if/else if statement
- 2.9 the char data type
- 5.1 introduction to loops: the while loop
- 5.3 the increment and decrement operators
- 5.4 counters
- 5.5 keeping a running total

Week 4

Jan 30 - Feb 3

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- 6.1 modular programming
- 6.2 defining and calling functions
- 6.3 function prototypes
- 6.4 sending data to a function
- 6.5 passing data by value
- 6.6 the return statement
- 6.7 returning a value from a function

Week 5

Feb 6 - Feb 10

Exam 1 covers topics in weeks 1-3

Exam 1 opens Monday 8am in ESLC131

Exam 1 closes Saturday 5pm

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2.10 the c++ string class

2.11 the bool data type

2.12 determining the size of a data type

2.13 more on variable assignments and initialization

2.14 scope

4.5 menu-driven programs

Week 6

Feb 13 - Feb 17

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2.16 comments

2.17 programming style

3.4 overflow and underflow

3.5 named constants

5.8 the for loop

5.12 using files for data storage

Week 7

Feb 20 - Feb 24

//No class on Feb 20 (Presidents' Day)

//Class cancelled Feb 21 (No Virtual Monday)

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3.6 multiple and combined assignment

3.7 formatting output

3.8 working with characters and strings

3.9 more mathematical library functions

3.10 random numbers

4.6 nested if statements

4.7 logical operators

Week 8

Feb 27 - Mar 3

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7.12 structures

4.8 validating user input

4.9 more about blocks and scope

4.10 more about characters and strings

4.11 the conditional operator

4.12 the switch statement

Week 9

Mar 6 - Mar 10

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Spring Break!!

Week 10

Mar 13 - Mar 17

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4.13 enumerated data types

5.2 using the while loop for input validation

5.6 sentinels

5.7 the do-while loop

5.10 nested loops

5.11 breaking out of a loop

Week 11

Mar 20 - Mar 24

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6.8 returning a boolean value

6.9 using functions in a menu-driven program

6.10 local and global variables

6.11 static local variables

6.13 using reference variables as parameters

7.1 abstract data types

7.2 object-oriented programming

7.3 introduction to classes

7.4 creating and using objects

7.5 defining member functions

7.6 constructors

7.7 destructors

Week 12

Mar 27 - Apr 1

Exam 2 covers topics already covered from chapters 1-6

Exam 2 opens Monday 8am in ESLC131

Exam 2 closes Saturday 5pm

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6.12 default arguments

6.14 overloading functions

6.15 the exit() function

6.16 stubs and drivers

7.1-7.7 Review classes

7.8 private member functions

7.9 passing objects to functions

Week 13

Apr 3 - Apr 7

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7.10 object composition

7.13 more about enumerated data types

8.1 arrays hold multiple values

8.2 accessing array elements

8.3 inputting and displaying array data

8.4 array initialization

Week 14

Apr 10 - Apr 14

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8.5 the range-based for loop

8.6 processing array contents

8.7 using parallel arrays

8.8 the typedef statement

8.9 arrays as function arguments

8.10 two-dimensional arrays

Week 15

Apr 17 - Apr 21

8.11 arrays with three or more dimensions

8.12 vectors

8.13 arrays of objects

Week 16

Apr 24 - Apr 28


Dead Week - No New Topics

Exam 3 covers chapters 1-8

Exam 3 opens Tuesday at 8am in ESLC 131

Exam 3 closes Tuesday 8pm in ESLC 131

Course Summary:



















Date	Details
Mon Jan 9, 2017	 Week 1 Reading (https://usu.instructure.com/courses/445678/assignments/2175187)

due by 11:59pm

Date	Details	
Fri Jan 13, 2017	 Week 1 Programming Challenges (https://usu.instructure.com/courses/445678/assignments/2175186)	due by 11:59pm
Mon Jan 16, 2017	 Week 2 Reading (https://usu.instructure.com/courses/445678/assignments/2175189)	due by 11:59pm
Tue Jan 17, 2017	 HW1 - Hello, World (https://usu.instructure.com/courses/445678/assignments/2175166)	due by 11:59pm
Fri Jan 20, 2017	 Week 2 Programming Challenges (https://usu.instructure.com/courses/445678/assignments/2175188)	due by 11:59pm
Mon Jan 23, 2017	 Week 3 Reading (https://usu.instructure.com/courses/445678/assignments/2175191)	due by 11:59pm
Tue Jan 24, 2017	 HW2 - Averaging Scores (https://usu.instructure.com/courses/445678/assignments/2178371)	due by 11:59pm
Fri Jan 27, 2017	 Week 3 Programming Challenges (https://usu.instructure.com/courses/445678/assignments/2175190)	due by 11:59pm
Mon Jan 30, 2017	 Week 4 Reading (https://usu.instructure.com/courses/445678/assignments/2175193)	due by 11:59pm
Tue Jan 31, 2017	 HW3 - How a Dog's Brain Works (https://usu.instructure.com/courses/445678/assignments/2175167)	due by 11:59pm
Fri Feb 3, 2017	 Week 4 Programming Challenges (https://usu.instructure.com/courses/445678/assignments/2175192)	due by 11:59pm
Mon Feb 6, 2017	 Week 5 Reading (https://usu.instructure.com/courses/445678/assignments/2175195)	due by 11:59pm
Tue Feb 7, 2017	 HW4 - Special Delivery (https://usu.instructure.com/courses/445678/assignments/2175168)	due by 11:59pm
Fri Feb 10, 2017	 Week 5 Programming Challenges (https://usu.instructure.com/courses/445678/assignments/2175194)	due by 11:59pm
Sat Feb 11, 2017	 Exam 1 (https://usu.instructure.com/courses/445678/assignments/2175150)	due by 7pm
Mon Feb 13, 2017	 Week 6 Reading (https://usu.instructure.com/courses/445678/assignments/2175197)	due by 11:59pm

Date	Details	
Tue Feb 14, 2017	 HW5 - Art-o-Mat Cigarette Vending Machine https://usu.instructure.com/courses/445678/assignments/2175169	due by 11:59pm
Fri Feb 17, 2017	 Week 6 Programming Challenges (https://usu.instructure.com/courses/445678/assignments/2175196)	due by 11:59pm
Mon Feb 20, 2017	 Week 7 Reading (https://usu.instructure.com/courses/445678/assignments/2175199)	due by 11:59pm
Tue Feb 21, 2017	 HW6 - ROT13 Decoder (https://usu.instructure.com/courses/445678/assignments/2175170)	due by 11:59pm
Fri Feb 24, 2017	 Week 7 Programming Challenges (https://usu.instructure.com/courses/445678/assignments/2175198)	due by 11:59pm
Mon Feb 27, 2017	 Week 8 Reading (https://usu.instructure.com/courses/445678/assignments/2175201)	due by 11:59pm
Tue Feb 28, 2017	 HW7 - Devil's Dice (https://usu.instructure.com/courses/445678/assignments/2175171)	due by 11:59pm
Fri Mar 3, 2017	 Week 8 Programming Challenges (https://usu.instructure.com/courses/445678/assignments/2175200)	due by 11:59pm
Mon Mar 6, 2017	 Week 9 Reading (https://usu.instructure.com/courses/445678/assignments/2175203)	due by 11:59pm
Mon Mar 13, 2017	 Week 10 Reading (https://usu.instructure.com/courses/445678/assignments/2175177)	due by 11:59pm
Tue Mar 14, 2017	 HW8 - Color Smoosh (https://usu.instructure.com/courses/445678/assignments/2175173)	due by 11:59pm
Fri Mar 17, 2017	 Week 10 Programming Challenges (https://usu.instructure.com/courses/445678/assignments/2175202)	due by 11:59pm
Mon Mar 20, 2017	 Week 11 Reading (https://usu.instructure.com/courses/445678/assignments/2175179)	due by 11:59pm
Tue Mar 21, 2017	 HW9 - Mandelbrots (https://usu.instructure.com/courses/445678/assignments/2175174)	due by 11:59pm
	 HW9 Extra Credit - Mandelbrot Images https://usu.instructure.com/courses/445678/assignments/2175175	due by 11:59pm

Date	Details	
Sun Mar 26, 2017	 Week 11 Programming Challenges (https://usu.instructure.com/courses/445678/assignments/2175176)	due by 11:59pm
Mon Mar 27, 2017	 Week 12 Reading (https://usu.instructure.com/courses/445678/assignments/2175181)	due by 11:59pm
Tue Mar 28, 2017	 HW10 - Piggy Bank (https://usu.instructure.com/courses/445678/assignments/2175158)	due by 11:59pm
Sat Apr 1, 2017	 Exam 2 (https://usu.instructure.com/courses/445678/assignments/2175152)	due by 7pm
	 Week 12 Programming Challenges (https://usu.instructure.com/courses/445678/assignments/2175178)	due by 11:59pm
Mon Apr 3, 2017	 Week 13 Reading (https://usu.instructure.com/courses/445678/assignments/2175183)	due by 11:59pm
Tue Apr 4, 2017	 HW11 - Lunar Lander (https://usu.instructure.com/courses/445678/assignments/2175159)	due by 11:59pm
Fri Apr 7, 2017	 Week 13 Programming Challenges (https://usu.instructure.com/courses/445678/assignments/2175180)	due by 11:59pm
Mon Apr 10, 2017	 Week 14 Reading (https://usu.instructure.com/courses/445678/assignments/2175185)	due by 11:59pm
Tue Apr 11, 2017	 HW12 - Film Stats (https://usu.instructure.com/courses/445678/assignments/2216372)	due by 11:59pm
Fri Apr 14, 2017	 HackerRank - CS 1 Lab Challenge Extra Credit (https://usu.instructure.com/courses/445678/assignments/2175156)	due by 11:59pm
	 Week 14 Programming Challenges (https://usu.instructure.com/courses/445678/assignments/2175182)	due by 11:59pm
Mon Apr 17, 2017	 Week 15 Reading (https://usu.instructure.com/courses/445678/assignments/2178780)	due by 11:59pm
Tue Apr 18, 2017	 HW13 - Game of Life (https://usu.instructure.com/courses/445678/assignments/2175160)	due by 11:59pm
Fri Apr 21, 2017	 Week 15 Programming Challenges (https://usu.instructure.com/courses/445678/assignments/2175184)	due by 11:59pm

Date	Details	
Fri Apr 28, 2017	 HW14 - Hastings (https://usu.instructure.com/courses/445678/assignments/2175162)	due by 11:59pm
Sun Apr 30, 2017	 HW15 (Extra Credit) - Flowers for Algernon (https://usu.instructure.com/courses/445678/assignments/2175163)	due by 11:59pm
Tue May 2, 2017	 Exam 3 (https://usu.instructure.com/courses/445678/assignments/2175154)	due by 11:59pm
	 HW16 - Hastings PvP (beta) (https://usu.instructure.com/courses/445678/assignments/2175164)	
	 Week 1 (https://usu.instructure.com/courses/445678/assignments/2185786)	
	 Week 10 (https://usu.instructure.com/courses/445678/assignments/2185799)	
	 Week 11 (https://usu.instructure.com/courses/445678/assignments/2185800)	
	 Week 12 (https://usu.instructure.com/courses/445678/assignments/2185801)	
	 Week 13 (https://usu.instructure.com/courses/445678/assignments/2185803)	
	 Week 14 (https://usu.instructure.com/courses/445678/assignments/2185805)	
	 Week 2 (https://usu.instructure.com/courses/445678/assignments/2185788)	
	 Week 3 (https://usu.instructure.com/courses/445678/assignments/2185789)	
	 Week 4 (https://usu.instructure.com/courses/445678/assignments/2185791)	
	 Week 5 (https://usu.instructure.com/courses/445678/assignments/2185792)	
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	 Week 8 (https://usu.instructure.com/courses/445678/assignments/2185796)	
	 Week 9 (https://usu.instructure.com/courses/445678/assignments/2185797)	

