CS F201 Computer Science I

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Office Hours	MWF 10:15-11:45am, or by appointment
Course Number	CS F201
Credits	3+0 credits, 45 contact hours
Prerequisites	CS 103 or 1 year high-school programming; math placement at the 200 level
Method	Lecture
Course Website	`https://classes.alaska.edu`
Location	UAF Campus in Duckering 530
Meeting Time	MWF 9:15-10:15am
Final	Wednesday, December 11, 8-10 am
Reading Materials	Your choice of a professional/educational C++ book
Recommended Reading	Programming: Principles and Practice Using C++ 2e by Bjarne Stroustrup. ISBN 978-0321992789
Recommended Reading	C++ Primer 5e by Lippman, Lajoie, and Moo. ISBN-13: 978-0321714114
Recommended Reading	`https://cppreference.com`
Recommended Reading	`https://en.wikibooks.org/wiki/LaTeX`

1. INTRODUCTION

Catalog Description. The discipline of computer science including problem solving, algorithm development, structured programming, top-down design, good programming style, object-oriented programming and elementary data structures. Concepts implemented with extensive programming experience in a structured language and with a group programming project.

2. STUDENT OUTCOMES

In this section, we cover the list of course outcomes. This is what you should expect to be able to do when the course is completed.

- Have a basic programming proficiency in the C++ language, including practical knowledge of the structure of a program, variables, expressions, control structures, functions, simple data structures, IO, and the basics of classes.

- Understand the concept of an algorithm, and how to translate algorithms into code.

- Be familiar with basic sorting and searching algorithms.

- Be familiar with computer-programming concepts such as source code, linker, local variable, iteration, parameter, etc.

3. GRADING & COURSE POLICIES

3.1. Grading Overview

The course load consists of two exams, several homework assignments, several laboratory assignments, and a group project. The lowest *non-zero* homework grade will be replaced by the average grade of the remaining homework grades (0's included!), so ALL homework must be completed. The exams are primarily based on the content of the assigned readings or videos. This is summarized in the table below.

IMPORTANT! Homework and Projects are due before midnight. Late homework may get penalized one whole letter grade each day that it is late starting at 12:00am and late homework after 3 days may receive no credit. I encourage students to communicate if they are having difficulties. If Blackboard is down for maintenance, then submit when it comes back online the next day.

3.2. Grading Division

Points	%	Type
1500	15%	Midterm Examination
1500	15%	Final Examination
4000	40%	Assignments
2000	20%	Lab Work
1000	10%	Group Project
10000	100%	Totals

3.3. Grading Schema

A+	97-100	**A**	93-96	**A-**	90-92
B+	87-89	**B**	83-86	**B-**	80-82
C+	77-79	**C**	73-76	**C-**	70-72
D+	67-69	**D**	63-66	**D-**	60-62
F	0-59				

3.4. Homework Grades

The homework assignments are graded with the following scheme. Several items are pass/fail for the entire homework assignment. In other words, they must be completed or no credit at all is given regardless of the completion of the other items. All programs need to be able to compile. Students will be graded according to the following scheme. **IMPORTANT!** Pass/Fail items are immediately returned with a 0 score until fixed.

- (Pass/Fail) Programs compile and run

- (Pass/Fail) GitHub project

- (Pass/Fail) Overleaf Report written in LaTeX

- (Pass/Fail) Report submitted on Blackboard as a PDF (`lastname.firstname-hwN.pdf`)

- (Pass/Fail) Report includes link to GitHub repository

- (500 pts) Deliverables

    - (50 pts) Report contains *design* paragraph (~100 words)
    - (50 pts) Report contains *post mortem* paragraph (~100 words)
    - (50 pts) Report questions
    - (50 pts) Report contains *sample run*
    - (50 pts) Source Code has `Makefile` or Visual Studio Solution `.sln`
    - (50 pts) Source Code is neat and documented
    - (50 pts) 2 of the *additional programs* are completed
    - (100 pts) GitHub frequent commits

3.5. Project

The Group Project is a programming project consisting of 2 (or 3 members). Each team will be assigned a lead developer. Development is expected to be done using *pair programming*. There is a *pitch* phase, *design* phase, *update* phase, *delivery* phase, and a final *presentation*. The available topics and additional details will be discussed in class.

4. SCHEDULE

Week	Topics	Other
1	C++, Interactivity, Iteration	HW 0
2	More Iteration, `switch`	HW 1, Labor Day
3	Functions, Separate Files, Return Values	HW 2
4	Passing by Reference, Boolean Values, Characters	HW 3, Project *Pitch*
5	Programming with `vector`, More `vector`, Substrings	HW 4
6	Reading from a string, Searching, Binary Search vs Sequential Search	Project *Design*
7	Insertion Sort, Floating Point	Midterm Exam
8	Formatted Output, `struct`, Sequential Search with `pair`	HW 5
9	`map`, Using STL Algorithms, Using STL iterators	HW 6
10	STL Algorithms and Lambda Functions, Pseudorandom numbers, File output	Project *Update*
11	File Input, Pointers, Arrays and Pointer Arithmetic	HW 7
12	Dynamic allocation, Classes and Objects, Classes and Constructors	HW 8
13	Separate Class Header and Sources Files, Bits and Flags	Project *Delivery*
14	Miscellaneous Topics	Thanksgiving Break
15	Final Review	Project *Presentation*
16	Final	

5. COURSE POLICIES

Students are expected to be at every class meeting on time, and are responsible for all class content, whether present or not. If absence from class is necessary, students may make up in-class work (other than quizzes) and homework only on the instructor's approval; arrange absences due to scheduled events ahead of time.

Students who fail to attend the first class meeting after registering for the class, or who miss four consecutive class meetings, may be dropped from the class without warning, unless prior arrangements are made with the instructor.

Academic dishonesty will not be tolerated, and will be dealt with according to UAF procedures. You may discuss homework and lab assignments with others, but everything you turn in must be your own work. Students in this class pay the CS lab fee. Payment allows access to open computer labs on the 5th floor of the Duckering building.

- UAF academic policies `http://www.uaf.edu/catalog/current/academics`

- CS Department policies `http://www.cs.uaf.edu/departmental-policies`