SABANCI UNIVERSITY

CS 201 - Introduction to Computing

Spring 2022-2023

Instructors

Gülşen Demiröz (Section A)
- FENS G001-C
- E-mail: gulsen.demiroz@sabanciuniv.edu
- Lectures
    - Monday   12:40-14:30   (FENS G077)
    - Wednesday   12:40-13:30   (FENS G077)
    - Lectures will be broadcast on Zoom online from the classroom.

Erchan Aptoula (Section B)
- FENS 1108
- E-mail: erchan.aptoula@sabanciuniv.edu
- Lectures
    - Monday   09:40-11:30   (FASS G062)
    - Wednesday   13:40-14:30   (FASS G062)
    - Lectures will be broadcast on Zoom online from the classroom.

Course Description

The objective of this course is to introduce students to the field of computing and problem solving with the help of an object-oriented programming language (C++). Hence the course will cover many C++ features in detail as needed so students will also be learning a structured programming language.

Through the lectures, homework assignments and interactive recitations students will learn how to design algorithms based on object-oriented programming paradigms. Evaluation of the solutions in terms of correctness and efficiency will also be covered.

We may have to revise the course plan according to the countrywide reassessment to be made regarding higher education. This is expected to happen at the beginning of April. The content to be delivered is certain but the method of course delivery, the number and dates of exams, and some other details are subject to change.

TextBook

A Computer Science Tapestry, 2nd Edition, Owen L. Astrachan (NOT available in the bookstore anymore but available at the library and online). We may not stick to the textbook all the time, you are responsible for all material covered in class.

Course Tools and Installation Guide

- [Install Visual Studio 2012 on Windows](#)
- [Install Windows 10 & Visual Studio 2012 on macOS](#)
- [C++ Programming with Xcode on macOS](#)

Tentative Grading (subject to change)

- Recitation Attendance   **7%**
- Homework   **45% (HW1 & HW2: 5% and others: 7%)**
- Final Exam   **48%**

Important Notice about grading:
Weighted average is not the only criterion in letter grading!

- If your exams' *weighted* average
  ~~(((Midterm × 0.32) + (Final × 0.36)) / 0.68)~~ Final
  is below 20, you will fail the course even if your total grade is equal or above the overall passing grade. (Having exams' weighted average greater than or equal to 20 does not mean that you will pass the course.)
- If you miss all of the homework assignments, ~~the midterm~~ and the final exams as well; then you will get an NA grade.
- If you miss the ~~midterm or~~ final exam and if you do not take the make-up exam for that missing exam; then you will directly get an F grade.

Homework

There will be at least **7** or more homework assignments like mini programming projects. They will be assigned and collected at **SUCourse+**. All of the assigned homework will be graded and taken into consideration in the overall grade. Recitations will be used for clarifications about these.

Contribution of the homework assignments to the overall grade will be calculated according to the formula given below:

$$
hw\_grade = \begin{cases} hw\_avg & if \quad ratio \leq 2 \\ hw\_avg \times (3 - ratio) & if \quad 2 < ratio < 3 \\ 0 & if \quad ratio \geq 3 \end{cases}
$$

$ratio = submitted\_hw\_avg / weighted\_exam\_avg$
$weighted\_exam\_avg = final\_grade$
$course\_numeric\_grade = attendance \times 0.07 + hw\_grade \times 0.45 + final\_grade \times 0.48$

Your homework programs will be automatically graded by CodeRunner (SUCourse+).

Useful Information about course and FAQ

You can also find them here.

Expectations from Students

- Students are expected to attend all classes and recitations. You will need to spend more time to compensate for a missed class. Hence you must attend the lectures, recitations and exams.
- Students are responsible for the material covered in class even if it is not part of the lecture notes published on SUCourse+. That is why attendance is important.
- Students are responsible to check their emails (Sabanci University accounts), SUCourse and course website daily for any announcements related to this course.
- **PLAGIARISM WILL NOT BE TOLERATED.**
    - Any act of plagiarism may result in a direct fail (F) of the course.
- If you need to take a medical report for any exam;
  Please read the policies on both **plagiarism** and **make-up exams** here.

Course Outline

- Week 1: Introduction to Programming Languages, Data Representation (bits and bytes), basic programming structure and concepts: identifiers, literals, symbols, variables, screen input/output (cin and cout)
- Week 2: Basic data types (int/double/char/bool) and basic arithmetic operations with their precedence, first C++ program
- Week 3: Functions with/out return values, function prototypes, parameter passing (pass by value and by reference)
- Week 4: Conditional statements (if-else), nested else-if statements, logical operators (&&, ||, !)
- Week 5: String class, loops (while, for, do-while)
- Week 6: Loops (while, for, do-while), char data type
- Week 7: Structs, enum, vectors/arrays and vector operations
- Week 8: Vector operations: sequential/binary search, insert/delete to a vector
- Week 9: Sorting (selection and insertion sort) and introduction to algorithm complexity analysis, vector of structs, matrix
- Week 10: File I/O, console stream cin, input and output file streams, string streams
- Week 11: Classes and objects: using existing classes such as Dice, RandGen, Date
- Week 12: Classes and objects: using and modifying existing classes such as Dice, RandGen, Date
- Week 13: Recursion
- Week 14: Pointers, linked lists