Intermediate Computer Programming
CS313
Spring 2022

GENERAL

Course Code & Name:	CS313 Intermediate Computer Programming
Term:	Second Semester Spring 2022
Lectures:	MW 13:15 - 14:45
	https://ashesi.zoom.us/j/3692584073
Lab:	F 17:10 – 18:40
	https://ashesi.zoom.us/j/3692584073

INSTRUCTOR

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FACULTY INTERN

Name:	Daniel Nettey
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Consultation:	Stop by or make an appointment

COURSE DESCRIPTION

This course is a continuation of *Computer Programming for CS*. It will introduce students to more details of object definition and construction and event-driven programming. It will also introduce additional standard Java packages, including the file system and graphical user interface elements. This course will also give students an introduction to C++. Good software engineering practices will be featured in various aspects of the course, and notations similar to the Unified Modeling Language (UML) will be employed. Students will gain experience in designing and implementing larger systems. However, the emphasis of the course will be on the use of prewritten packages and built-in language facilities, as well as design and implementation of moderately sized custom classes and algorithms, rather than on the design of whole systems.

OBJECTIVES

- Make use of software engineering to develop moderately sized applications.

Java programming:
Students will
- Be very proficient Java programmers
- Make use of inheritance and object hierarchies
- Write applications with GUIs using model-view patterns
- Write multi-threaded applications
- Manipulate data in files
- Be introduced to the Collections framework.

C++ Programming
Students will be able to
- Write applications in C++
- Use pointers correctly
- Reuse code by means of inheritance

ACADEMIC HONESTY

Students are expected to follow all rules and guidelines of the course, do independent work (unless specified otherwise), use specified material for specified activities, reference all sources used for work, participate in preventing cheating or identify others who cheat.

ASHESI LEARNING GOALS

1. **Leadership and teamwork:** Students will work on some projects in teams and will learn to collaborate with others to create a viable product.
2. **Curiosity and Skill:** *An Ashesi student is inquisitive and confident, has breadth of knowledge, and has attained a high level of mastery in their chosen field.* Students will be expected to explore a few new technologies beyond what is taught in class, on order to accomplish some projects
3. **Technological Competence:** *An Ashesi student is an effective and flexible user of technology.* Students will acquire specialist knowledge in application development.
4. **Communication**: *An Ashesi student is an excellent communicator in a variety of forms.* This course requires students to produce technical reports and documentation to accompany their code.

TEACHING STYLE

There will be lectures and labs. Students are encouraged to ask questions and make contributions.

TEXT

- **Savitch, W., (2016) Absolute C++, 7th Ed., Pearson Education Ltd. (AJ)**
- **Savitch, W., (2016) Absolute Java, 6th Ed., Pearson Education Ltd. (AC)**
- Amanquah, N., Intermediate Computer Programming in Java and C++ (unpublished book draft)
- Oracle Corporation, Sun Java Tutorial- The Swing Trail
- C++ documentation (www.cplusplus.com)

LECTURE SCHEDULE

Below is the schedule for the course. Note that the schedule is subject to change.

Week	Date	Lectures	Lab/Assignments
1	Jan 17 – Jan 21	Course Outline & Hw0 Getting Started with Java (AJ Ch 1) C++ Basics (AC Ch 1)	Group Formation (lecturer assigned - 6 in a group) Assign hw 0: Setting Up for the Course Hw 0 due
2	Jan 24 – Jan 28	Arrays (AJ Ch 6) Project Phase 1	Assign Project Phase 1: Writing Functions
3	Jan 31 – Feb 4	Project Phase 1 Discussion (Breakout rooms & together) Defining Classes 1&2 (AJ Ch 4 & 5) Project Phase 2	Assign Project Phase 2: Using Classes Quiz 1
4	Feb 7 – Feb 11	Project Phase 2 Project Phase 2 Discussion (Breakout rooms & together) Inheritance, Polymorphism, Interfaces, Exceptions (AJ Ch 7, 8, 13)	Assign Project Phase 3: Using Inheritance, Polymorphism, Interfaces
5	Feb 14 – Feb 18	Project Phase 3 Inheritance, Polymorphism, Interfaces, Exceptions (AJ Ch 7, 8, 9, 13)	Quiz 2
6	Feb 21 – Feb 25	Project Phase 4 File IO, JSON, Collections, ArrayList (AJ Ch 10, 14, 16)	Assign Project Phase 4: Using Files, JSON, Collections, ArrayList.

7	Feb 28 – Mar 4	UML & Design Patterns (AJ Ch 12)	Quiz 3
8	Mar 7 – Mar 11	Midsem	
9	Mar 21 – Mar 25	Project Phase 5 Swing 1 & 2 (AJ Ch 17 & 18)	Assign Project Phase 5: Adding Swing, Design Patterns
10	Mar 28 – Apr 1	Project Phase 5 Swing 1 & 2 (AJ Ch 17 & 18)	Quiz 4
11	Apr 4 – Apr 8	Project Phase 6 C++ Whirlwind	Assign Project Phase 6: Creating a C++ Version
12	Apr 11 – Apr 15	Project Phase 6 C++ Whirlwind	Quiz 5
13	Apr 18 – Apr 22	Project Phase 6 C++ Whirlwind	
14	Apr 25 – Apr 29	Wrapping Up	
15	May 2 – *	Exam	Exam

COURSE EVALUATION

1. **Attendance/Participation [4 points]:** Regular and punctual class attendance is required. Students are expected to contribute in class by asking questions and participating in class discussions.
2. **Citizenship [5 points]:** Points for providing sanctioned assistance to group members.
3. **Project [36 points]:** Points will be shared equally among all project phases.
4. **Quizzes [15 points]:** All quizzes have equal points.
5. **Final Exam [40 points]:** There will be a final exam worth 40 points.