Course Outline - Advanced Java

Class basics :

Set up rule- if don't understand something

- Raise your hand to ask a question or ask it in the chat box
- Tell students the importance of communication

knowledge:
What do the students already know?

- There is no prior knowledge required but it is encouraged to be good at english

Starting point:
What is the first thing you are going to teach?

- The thinking of computer science

Learning objectives:

- Students will be able to explain the idea of classes, objects, File I/O and recursions. They will also be able to create Java projects using the concepts learned.

Mission and vision:

- The mission of this course is to teach students the advanced concepts in Java.
- By the end of the course, every student will be able to create a project using the knowledge of classes, objects and other concepts taught in class.

Every course:

1. Attendance
2. Take up homework - also post in GC
3. Lesson
4. Assignments

There will be assignments every week and one final test at the end.

Topics:

1. Classes
2. OOP
3. Inheritant
4. File I/O
5. Recursion
6. Handling exceptions

Course outline + lesson plan:

1. Classes
    a. Introduction
    b. Course outline + expectations 10min
    c. What you remember - quiz
    d. Intro to classes and objects
2. OOP
    a. Encapsulation
    b. Polymorphysm
    c. Static
    d. toString and equals
3. Inheritance
    a. Intro
    b. Overriding vs overloading
    c. extends and super()
    d. Interface
    e. Is-A and HAS-A relationship
4. Handling Exception & File I/O & Recursion
    a. Intro
    b. Exceptions
    c. File I/O
    d. Excercise
    e. Recursion
5. Project
    a. Libraries
    b. Stack and queue
    c. Sorting algorithm

Final project:

Create a game using knowledge learned from the course of your choosing. doing. The point of this project is to show off student's skills, and to create something very usable, with clear instructions and amazing playability/demonstration.

The project MUST include the concepts covered in the course. The students do not have to use everything, however they should demonstrate as much as possible. The way they are implemented can be decided by students.

Concepts includes:

- Defining variables
- Print statement
- Recursion
- Classes

- Objects
- Exception handling
- File I/O
- Sorting methods

The project must demonstrate the skills learned and include:

- Proper programming practices (e.g. commenting, indenting…etc.)
- Be user friendly and have clear instructions displaying rules and
- objectives
- Use of a variety of programming control structures (loops and conditions)
- Demonstrate error checking for all user input (e.g. invalid input…etc.)
- Documentation throughout the code