CSCI 1202 SYLLABUS

Basic Information

- **ADA University, Spring Semester, 2023**
- **CSCI 1202 "Programming Principles II" [6 credits]**
- Sessions:

Joint Lecture :	Tue 08:30 (online)	
20280 :	Wed 08:30 (B302)	Fri 11:30 (D108)
20281 :	Thu 08:30 (B102)	Thu 16:00 (B102)
20282 :	Wed 13:00 (B302)	Fri 08:30 (B302)
20283 :	Wed 10:00 (B302)	Fri 11:30 (B302)
20284 :	Thu 10:00 (B302)	Fri 10:00 (B302)
20285 :	Thu 14:30 (B302)	Fri 14:30 (B302)

- **Instructors: Mr. Nuraddin Sh. SADILI, Mr. Asiman Mammadzada, Mr. Togrul Tahirov**
- **Office Hours: TBD**
- ~~**TA Sessions:**~~
  - ~~TBD~~
- **How to contact instructor**
  - Course related questions are to be posted in Discussion Forum of the Blackboard Course page.
  - In urgent or private cases personal online/offline meetings can be arranged.
  - E-mail addresses: nsadili@ada.edu.az , amammadzada2021@ada.edu.az , ttahirov16655@ada.edu.az
  - Preferred mode of communication: blackboard discussions || e-mail

Course Description

- **Prerequisites:**
  - Prior courses: CSCI 1101: Programming Principles I
  - Knowledge/skills needed to succeed in this course: Hands-on experience/practice is very important!

- **Technology requirements:**
  - Laptops for class work (strongly recommended)
  - Software: Any text editor (e.g., VS Code, Sublime Text, Notepad++, etc.) or any IDE that is compatible with Java development

- **Overview of course:**
  The course is an extension of the Programming Principles I and is about learning how to program computers to accomplish complex tasks and break down a complex task into simpler ones using the Java Programming language. (Java 17 or later can be used). The course in general introduces the advanced aspects of modern software programming.

- **Student learning objectives:**
  Students are expected to know or do the following after this course:
  - understanding the Platform-independent and Object-Oriented programming languages
  - syntax of the Java programming language.
  - data processing using file operations and collections.
  - understanding generics, annotations, and lambda functions.
  - aggregate operations and streams
  - data serialization, threads, and concurrency.
  - java database connectivity.
  - basics of GUI programming.

- **Methods of instruction:**
  - Prerecorded lecture notes and tutorials
  - Lectures, Exercise sessions and Practical sessions
  - Programming assignments / Homework
  - Quizzes

Materials

- **Primary or required books/ readings for the course:**
  - Java Tutorials by Oracle:
    https://docs.oracle.com/javase/tutorial/java/index.html
    https://docs.oracle.com/javase/tutorial/tutorialLearningPaths.html
  - Java Language Specification
    https://docs.oracle.com/javase/specs/jls/se17/html/index.html
  - Java Virtual Machine Specification
    https://docs.oracle.com/javase/specs/jvms/se17/html/index.html

Requirements

- **Assessments:**
  - *2 exams*: Midterm and Final Exams, both exams will be mixture of open and multi choice questions along with some coding exercises, but this rule is ***subject to change***.
  - Homework will be *3 take-home assignments*.
  - *5 quizzes* will be held during sessions and mostly covers the materials from the previous weeks.
  - Final project is announced in the second half of the semester and will be worked on as a team.
  - Attendance will be taken in each Joint Lecture Session and affect students' overall grade.
  - Active participation in discussion forums and classes will be graded.

Policies

- **Grading procedures:**

-	Attendance	**5%**
-	Participation	**10%**
-	Practical Work	**20%**
-	Quizzes	**10%**
-	Homework	**15%**
-	Midterm exam	**20%**
-	Final exam	**20%**

- **Bonus activities**
  - Bonus Assignments are graded **up to 5%** and added to the **final exam grade**.
- **Attendance, Late Policy and Participation.**
  - Starting from the very first week of the semester the attendance will be checked for Joint Lecture Sessions. Please, do NOT ask "why" questions like "why my attendance is so low".
  - You will be counted as "absent" if missed more than 20 minutes of the session in total or enter the session more than 20 minutes late.
  - Enter the session more than 10 minutes late, you are marked as "late".
  - The "absences" can be considered excused if and only if you have a valid reason and you inform the instructor in advance.

- **Missed assignments, Late assignments/extensions Policy.**
  - For each homework you will have 2 weeks to complete. Please, do NOT ask for extensions.
  - Rules for Homework assessments are to be communicated in the class.
  - No missed assignments will be accepted later (except the ones submitted in the next 24 hours with *25% penalty*)

- **Quiz assessments**
  - Graded quiz will be held either on computer or on paper **in the end of a session**. Please, do NOT ask for extensions and/or reschedules. Make sure you attend as many quizzes as possible.
  - Rules for Quiz assessments are to be communicated in the class.

- **Standards for academic honesty and penalties for infractions**
  Existing policies forbid cheating on examinations, plagiarism, and other forms of academic dishonesty. This kind of actions is absolutely against the school policies and will not be tolerated!

Schedule

Tentative calendar of topics, assignments, and exams:

Schedule	Theme	Topics	Assessments
Week 1	Introduction and Java Fundamentals	Intro to version control systems (git client) Introduction to the Java programming language, its keywords. Java packages.	
Week 2	Java operators & Control statements	Program control statements. Java data types, operators, type conversion, casting. Command-line arguments. var keyword	
Week 3	OOP	Introduction to the Classes, Objects, Constructors and Methods. Encapsulation. Association. this keyword. Method overloading. Introduction to class diagrams.	
Week 4	OOP (continued)	Java Arrays. Strings, String operations and for-each. StringBuilder, Ternary if operator.	
Week 5	OOP (continued)	Access modifiers and static members. Inheritance. Method overriding. super keyword, returning objects. null reference	
Week 6	OOP (continued)	Polymorphism. Interfaces, Abstract classes. BigInteger, BigDecimal classes. Enums Nested classes. Final vs effectively final Sealing classes Data encapsulation with Records	Assignment 1
Week 7	Exception handling	Error and Exceptions. Exception handling.	
Week 8	Collections	Introduction to Collections Framework. Lists, Sets, Queues, Maps Sorting collections	
MIDTERM EXAM			

Week 9	Generics	Introduction to Generics. Creating generic classes, methods. Type erasure. Bounding types.	
Week 10	Lambda Expressions	Introduction to the functional interfaces. Lambda expression. Introduction to Stream API	Assignment 2
Week 11	I/O	Byte and character streams, read and write binary and character data. File operations. Intro to java.nio and non-blocking I/O	
Week 12	Threads and concurrency	Fundamentals of concurrency programming. Thread synchronization. Intro to high level concurrency objects	
Week 13	Graphics	Introduction to Graphical User Interface AWT, Swing and JavaFX	
Week 14	Additional topics	Java and database (JDBC)	Assignment 3
Week 15	Additional topics	Assertions, Internationalization and Localization Packaging programs in JAR files Intro to Reflection API	
FINAL EXAM			

Disclaimer: Course schedule is subject to change!