



AMERICAN INTERNATIONAL UNIVERSITY-BANGLADESH (AIUB)

Faculty of Science and Information Technology (FSIT)
Department of Computer Science (CS)
Undergraduate Program

COURSE PLAN

Fall 2018-2019 SEMESTER

I. Course Title

CSC 2209: Object Oriented Programming 1

II. Credit

3 Credits (2 hrs theory and 3 hrs Lab per week)

III. Nature

Core Course for CS, CSE, CSSE, SE, CIS

IV. Prerequisite

CSC 2105: Data Structure

V. Vision:

Our vision is to be the preeminent Department of Computer Science through creating recognized professionals who will provide innovative solutions by leveraging contemporary research methods and development techniques of computing that is in line with the national and global context.

VI. Mission:

The mission of the Department of Computer Science of AIUB is to educate students in a student-centric dynamic learning environment; to provide advanced facilities for conducting innovative research and development to meet the challenges of the modern era of computing, and to motivate them towards a life-long learning process.

VII - Course Description:

- Develop classes and describe how to declare a class
- Create Java technology applications that leverage the object-oriented features of the Java language, such as encapsulation, inheritance, polymorphism and abstraction
- Execute Java applications from the command line
- Use Java technology data types and expressions
- Use Java technology flow control constructs
- Use arrays and other data collections
- Use the concept of package
- Implement error-handling techniques using exception handling
- Perform multiple operations on database tables, including creating, reading, updating and deleting using both JDBC
- Create an event-driven graphical user interface (GUI) using Swing components: panels, buttons, labels, text fields, and text areas
- Implement input/output (I/O) functionality to read from and write to data and text files and understand advanced I/O streams
- Create multithreaded programs

VIII – Course outcomes (CO) Matrix:

By the end of this course, students should be able to:

		Level of Domain*				PO Assessed**
		C	P	A	S	
CO1	Apply OOP concepts using Java		3			2
CO2	Analyze a simple to complex problem using OOP principles		4			3
CO3	Develop solutions for real life complex problems using the concepts of Java		6		TS	5
CO4	Explain the appropriateness of their developed solution in conjunction with concepts of OOP and Java			5		9

C: Cognitive; P: Psychomotor; A: Affective; S: Soft-skills (CT: Critical Thinking, TS: Teamwork)

*The numbers under the 'Level of Domain' columns represent the level of Bloom's Taxonomy each CO corresponds to.

** The numbers under the 'PO Assessed' column represents the PO that each CO corresponds to. Following is the list of the PO the will be assessed:

PO Assessed		
PO2	Problem Analysis	Identify, formulate, research and analyze complex engineering problems and reach substantiated conclusions using the principles of mathematics, the natural sciences and the engineering sciences.
PO3	Design/ Development of Solutions	Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for public health and safety and of cultural, societal and environmental concerns.
PO5	Modern Tool Usage	Create, select and apply appropriate techniques, resources and modern engineering and IT tools, including prediction and modeling, to complex engineering activities with an understanding of their limitations.
PO9	Individual Work and Teamwork	Function effectively as an individual and as a member or leader of diverse teams and in multidisciplinary settings.

IX – Topics to be covered in Theory class*:

TOPICS	Specific Objective(s)	Time Frame	Suggested Activities	Teaching Strategy(s)	CO mapped
Introduction to Java Language, Java technology, Java development Environment	Knowing Mission & Vision of AIUB. Understand Java Language, java development platforms and demonstrate the system setup for Java. Identify and use data types and expression in Java. Develop First Java application.	Week 1	Lecture LAB: Java Environment Setup, Compilation & Execution, Hello World, and develop simple class using java	Lecture notes, question-answer session.	CO2

Introduction to Object Oriented Programming (OOP) paradigm, Encapsulation, and Polymorphism	Develop java classes and describe member variables and functions. Explain empty and valued constructor, access modifiers. Apply polymorphic behavior to achieve flexibility.	Week 2	Lecture LAB : Create simple classes, develop get & set methods, and overloaded constructors, and different access modifiers.	Lecture notes, question & answer session.	CO1, CO2
Java statements, flow control, and Java String and array	Comprehend and use Java statements and flow control, Java array and memory initialization. Comprehend Java String class.	Week 3	Lecture Lab: Declare array of objects and initialize memory for these objects, delete object from the array, update object, and search object. String class and its different member functions Quiz-1 Assignment-1	Lecture notes, question-answer session.	CO1, CO2
Formulate complex problem with multiple classes using OOP concept, and Java I/O	Develop different classes with interactions. Java simple I/O operations.	Week 4	Lecture LAB : Implement multi-class interaction problems, and I/O operations.	Lecture notes, question-answer session.	CO1, CO2
Introducing inheritance, access modifiers, and visibility. Introducing Package.	Explain the concept of inheritance, access modifier of members with visibility in different packages. Explain how to achieve run time polymorphism with method overriding.	Week 5	Lecture LAB: Construct super and sub-classes, constructors calling mechanism, example of access modifiers visibility, and test overriding methods. Quiz-2	Lecture notes, question-answer session.	CO2, CO3
Java Abstract class and Interface	Creating interface and abstract class. Interpret, distinguish and use abstract class and interfaces.	Week 6	Lecture LAB: Program design using abstract class and interface as well as implication of final method and final class. Lab Exam Assignment-2	Lecture notes, question-answer session.	CO2, CO3

Midterm Week Week 7					
Exception Handling	Explain and apply java run time error handling mechanism.	Week 8	Lecture LAB: Develop different simple program to test try, catch, throw, throws, and finally. Difference between checked and un-checked exception, and develop custom exception class.	Lecture notes, question-answer session.	CO2
Introducing Java GUI and different GUI components	Identify, analyze and use Java swing libraries, basic classes for developing GUI application, layout manager, and different GUI components.	Week 9	Lecture LAB: Develop simple java JFrame and place different GUI components on top of the frame.	Lecture notes, question-answer session.	CO4
Java Event handling	Identify, analyze and use events for different types of GUI components, and implement interfaces to handle different events.	Week 10	Lecture LAB: Different event implementation using different ways. Quiz-1	Lecture notes, question-answer session.	CO2, CO4
Java Graphics	Identify, analyze and use Java Graphics API and its purpose.	Week 11	Lecture LAB: Develop simple java program to learn java graphics API.	Lecture notes, question-answer session.	CO2, CO4
Java Thread, and collection framework	Identify, analyze and use java thread, and different ways to implement thread, and synchronization of threads. Get familiar with collection framework.	Week 12	Lecture LAB: Develop java thread extending Thread class, and implementing runnable interface. Solve practical problem using java the thread. Test different collection framework's classes. Quiz: 2	Lecture notes, question-answer session.	CO2, CO4

Database Connectivity, and File I/O.	Analyze, design and develop database connectivity using java application, and basic database operations. Analyze, design and develop java socket programming and client-server architecture, Input/output (I/O) functionality to read from and write data to text files and understand advanced I/O streams.	Week 13	Lecture LAB: Develop java database application with CRUD operations. Simple examples of file I/O, and socket programming. Project Submission	Lecture notes, question-answer session.	CO4, CO5
Final term Week Week 14					

* The faculty reserves the right to change, amend, add or delete any of the contents.

X- Course Requirements

At least **80% class attendance** is necessary to sit for the exam. If there is any assignment given to the students, they have to submit it before the deadline decided by the course teacher.

XI – Evaluation & Grading System

The following table shows the evaluation criteria for this course:

Marking System for Mid Term		Marking System for Final Term	
Attendance & Performance	10	Attendance & Performance	10
Quiz (Best 1 out of 2)	20	Quiz (Best 1 out of 2)	20
Lab Tasks	20	Lab Tasks	20
Lab Exam	10	Project Viva	10
Mid Term Exam	40	Project	40
Total	100	Total	100
Grand Total: 50% of Mid Term + 50% of Final Term			

The following table is a reference to AIUB Grading Policy:

Letter	Grade Point	Numerical %
A+	4.00	90 - 100
A	3.75	85 - < 90
B+	3.50	80 - < 85
B	3.25	75 - < 80
C+	3.00	70 - < 75
C	2.75	65 - < 70
D+	2.50	60 - < 65
D	2.25	50 - < 60
F	0.00	< 50 (Fail)

XII – Teaching Methods

Majority of the topics will be covered from the textbook. For the rest of the topics, reference books will be followed. Lectures notes will be uploaded in the VUES course page. White board will be used with multimedia projector for the convenience of the students.

XIII – Textbook/ References

1. Java Complete Reference, 7th Edition, By Herbert Schildt.
2. Java How to Program Java, 9th Edition, By Deitel and Deitel.
3. The Java Language Specification, By J. Gosling, B. Joy, G. Steele, G.Bracha and A. Buckley
4. Introduction to Programming Using Java, 6th Edition, By David j. Eck
5. Head First Java, By Kathy Sierra and Bert Bates
6. The Java Tutorials. <http://docs.oracle.com/javase/tutorial/>

XIV - List of Faculties Teaching the Course

1. Mohaimen-Bin-Noor (Course Convener)
2. Dr. Kamruddin Md. Nur
3. A. Z. M. Ehtesham Chowdhury

XV – Verification:

Prepared by : ----- Mohaimen-Bin-Noor Course Lecturer Date:.....	Checked and certified by: ----- (Head of Department) Date:.....	Approved by: ----- (Dean of Faculty of Science and Information Technology) Date:.....
	Moderated by : ----- 1994 Date :	Moderated by : ----- Date :