UNITED INTERNATIONAL UNIVERSITY

Department of Computer Science and Engineering (CSE)

Course Syllabus

1	**Course Title**	Object Oriented Programming
2	**Course Code**	CSE 1115
3	**Trimester and Year**	Spring 2021
4	**Pre-requisites**	CSI 121 Structured Programming Language
5	**Credit Hours**	3.0
6	**Section**	A
7	**Class Hours**	Sunday & Wednesday 2:00 PM - 3:30 PM
8	**Class Room**	Online
9	**Instructor's Name**	Dr. Dewan Md. Farid
10	**Email**	dewanfarid@cse.uiu.ac.bd
11	**Office**	433 (E)
12	**Counselling Hours**	
13	**Text Book**	Java The Complete Reference, Herbert Schildt
14	**Reference**	1. Java: How to Program, 9th Edition (Deitel & Deitel) 2. Java Programming By ANM Bazlur Rahman 3. https://codingbat.com/java
15	**Course Contents (approved by UGC)**	Object oriented fundamentals, Java Application, Java applets, Methods, Arrays, String & characters, Graphics & java2D, Basic graphical user interface components, Multithreading, Multimedia, Files & streams, JDBC, Servlets, RMI, Networking, Java beans.
16	**Course Outcomes (COs)**	

CO	Statement	Bloom's Domain	Program Outcome	Knowledge Profile	Complex Problem	Engineering Activities
CO1	Understand the fundamental concepts and features of Object-Oriented Programming and use these to write programs for solving computational problems.	C	A Engineering Knowledge	K3 – Engineering fundamentals	P1 – Depth of Knowledge	-

CO2	Understand the core concepts of GUI programming, File IO, Collections framework and use these to solve programming problems.	C	B Problem Analysis			-

17	**Teaching Methods**	Lecture, Case Studies, Project Developments.
18	**CO with Assessment Methods**	

CO	Assessment Method	(%)
-	Attendance	5
-	Assignments	10
-	Class Tests	40
CO1	Midterm exam	20
CO1,CO2	Final exam	25

19 Mapping of COs and Program outcomes

COs	Program Outcomes(POs)											
	PO a	PO b	PO c	PO d	PO e	PO f	PO g	PO h	PO i	PO j	PO k	PO l
CO1	X											
CO2		X										

20 Lecture Outline

Class	Topics/Assignments	COs	Reading Material	Lecture Outcomes/Activities
1	Introduction, Review of Programming, programming language, compiler	-	Slide	1. What Programming is? 2. Describe different types of programming. 3. Differentiate between Programming and Programming Language.
2	Introduction to OOP, Java basics(Why Java, Application Class, Main method, identifier)	CO1		1. What is Application class 2. Describe rules of java identifier. 3. Develop basic Hello World program.
3	Java Basics(data type, operator, control statement, array)	CO1	Ch 3, 4, 5	1. Describe data type, operators, control statement. 2. Define what array is and why we use array. 3. Develop simple program using different types of data, operator and control statement.

4	Class and Object(Constructor, constructor overloading, Initialization block, this keyword, default value, member of class, create object and access member, getter/setter)	CO1	Ch 6, 7	1. Describe what class and object are. 2. Describe who the members of a class are. 3. Able to create class and object and access members.
5	Some Concepts: Scope of variable, ref variable, pass by value/reference, garbage collection	CO1	Ch 6	1. Differentiate between normal and reference variable. 2. Explain Scope of a variable. 3. Describe the effect of pass-by-value and pass-by-reference.
6	**Assessment (CT1).** Package, access modifier.	CO1	Ch 7, 9	1. Describe what is accessible from a specific point in regards to access modifier & package, 2. Describe how to use package and what the benefit of library is.
7	OOP Feature: Inheritance, this and super keyword, Object Class.	CO1	Ch 8	1. Explain what inheritance is. 2. Describe what get inherited to child class and what can't be inherited. 3. Get familiar with Object class and some of its method.
8	OOP Feature: Encapsulation, Method overloading)	CO1	Ch 7	1. Explain what encapsulation and overloading are and where to use these features. 2. Describe importance of encapsulation and overloading. 3. Able to develop code using encapsulation and overloading.
9	OOP Feature: Method Overriding, override equals() and toString() method.	CO1	Ch 8	1. Explain what method overriding is and where to use this feature. 2. Describe importance of method overriding 3. Able to develop code using overriding.
10	Static & Final keyword, SubClass Polymorphism, Benefit of Polymorphism	CO1	Ch 7	1. Describe what is static and final variable and method. 2. Explain the benefits
11	**Assessment (CT2).** Abstraction, Abstract Class, abstract method	CO1	Ch 8	1. Explain what abstraction is & how to achieve abstraction.
12	Review			
	MIDTERM EXAM			
13	Interface- variables, methods, abstract class vs. interface	CO1	Ch 8	1. Explain what interface is & how to declare an interface.

				2. How can we use interface to achieve inheritance relationship.
14	Exception – try/catch/finally, nested try/catch, throw vs. throws, method stack	CO1	Ch 10	1. Explain what Exception is. 2. Explain how to handle exception using try/catch block. 3. Explain how to throw an exception.
15	Checked/unchecked exception. User Defined Exception	CO1	Ch 10	1. Differentiate between checked and unchecked exception. 2. Can create and use user defined exception.
16	**Assessment (CT3).** Nested Class- anonymous class, inner class, accessing variable and method of nested class.	CO1	Ch 7	1. Explain and Apply Nested Classes: Local, Inner and Anonymous class concept.
17	GUI Basic – Components, Container, Layout	CO2	Ch 31-33	1. Explain different components of GUI. 2. Create GUI application using different Layout and components.
18	GUI Event Handling- source, listener, event object. Steps to handle event. Handle multiple events	CO2	Ch 24-26	1. Explain and apply the event handling process. 2. Develop GUI application involving multiple event handling.
19	IO- Streams, Buffering, File read	CO2	Ch 20	1. Explain the IO model, buffering. 2. Able to develop application involve reading from file.
20	**Assessment (CT4).** File write	CO2	Ch 20	1. Able to develop application involve writing to file.
21	Collections- framework, list, ArrayList	CO2	Ch 18	1. Explain the components of Collection framework. 2. Able to use the already defined Collection classes. 3. Able to create ArrayList of objects.
22	Comparable, Comparator, ArrayList sorting	CO2	Ch 18	1. Able to use Comparable, Comparator to compare the items in a Collection. 2. Able to sort an ArrayList of objects.
23	**Assessment (CT5).** Set – HashSet, Map – HashMap	CO2	Ch 18	1. Able to create HashSet and HashMap of objects
24	Review			

Appendix 1: Assessment Methods

Assessment Types	Marks
Attendance	5%
Assignments	10%
Class Tests	40%
Mid Term	20%

Final Exam	25%

Appendix 2: Grading Policy

Letter Grade	Marks %	Grade Point	Letter Grade	Marks%	Grade Point
A (Plain)	90-100	4.00	C+ (Plus)	70-73	2.33
A- (Minus)	86-89	3.67	C (Plain)	66-69	2.00
B+ (Plus)	82-85	3.33	C- (Minus)	62-65	1.67
B (Plain)	78-81	3.00	D+ (Plus)	58-61	1.33
B- (Minus)	74-77	2.67	D (Plain)	55-57	1.00
			F (Fail)	<55	0.00

Appendix-3: Program outcomes

POs	Program Outcomes
PO1	An ability to apply knowledge of mathematics, science, and engineering
PO2	An ability to identify, formulate, and solve engineering problems
PO3	An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
PO4	An ability to design and conduct experiments, as well as to analyze and interpret data
PO5	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice
PO6	The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
PO7	A knowledge of contemporary issues
PO8	An understanding of professional and ethical responsibility
PO9	An ability to function on multidisciplinary teams
PO10	An ability to communicate effectively
PO11	Project Management and Finance
PO12	A recognition of the need for, and an ability to engage in life-long learning