Birla Institute of Technology & Science, Pilani
Hyderabad Campus

SECOND SEMESTER 2022-2023
Course Handout – Part II

Date: 16.01.2023

In addition to Part-I (General Handout for all courses appended to the time table) this portion gives further specific details regarding the course.

Course Number : CS F213
Course Title : Object Oriented Programming
Instructor In-Charge : Dr. Abhijit Das
Other Instructors : Dr. Subhrakanata Panda, Dr. Aritra Mukherjee, Dr. Aneesh Sreevallabh Chivukula, Prerna Saurabh, Deepa Kumari, Chaitra C R

1. Scope of the course:

This course is offered to those who have completed a course on C-programming, which is one among the popular procedure-oriented programming languages. Important point to be noted is that the features/concepts Object Oriented paradigm are investigated and understood by working with Java.

The scope of this course includes- need for the Object Oriented (OO) paradigm; fundamental features of OO paradigm like- encapsulation, inheritance, polymorphism and abstraction; use of Classes and Objects; basic components of class-data and behavior/operations; basics of Java programming language- data types, operators, constructs, classes, methods etc., writing multithreaded programs in Java ; Java Exception handling; Java Input and output model and Object serialization; Java AWT supporting GUI development with Event handling mechanism; Java Collections Framework and important Utility classes. The scope also includes- a brief introduction to Object Oriented Analysis and Design (OOAD) process; Introduction to Design Patterns; Summary of other important Object Oriented Languages (other than Java).

2. Course objectives:

- To gain an understanding of the need for Object Oriented Paradigm.
- To gain knowledge on important features of Object Orientation with the help of Java (through hands-on lab experience) including Multithreading, Exception Handling and Input/Output.
- To make the student understand how GUI applications can be developed with Java with sufficient hands-on.
- To gain basic knowledge on Object Oriented Design methodology, UML modeling and Design patterns.

3. **Text Book:**

T1: The object-oriented thought process, Matt Weisfeld, Third Edition, Addison-Wesley, 2013.

T2: The Complete Reference- Java, 11th Edition, Herbert Schildt, Tata McGraw Hill Publishing. 2019.

4. **Reference Books:**

R1. Object Oriented Analysis and Design with Applications, Grady Booch, Addison Wesley, 2nd Edition.

R2. The Unified Modeling Language User Guide, the ultimate tutorial to the UML from the Original Designers, G Booch, J Rumbaugh, I Jacobson, Pearson Education, 2006.

5.Course Plan

Lecture No.	Learning Objectives	Topics to be covered	Chapter in the Text Book
1-3	To understand the need for Object Orientated Programming Paradigm ; and to know the basics of OO paradigm.	Introduction to Object Oriented Concepts	T1: Ch.1 and Class notes
4-5	To understand the difference between the interface and implementation; object behavior and to know how to identify the public interfaces.	Thinking in terms of Objects	T1: Ch.2 and Class notes
6-9	To understand the theory behind OO concepts like- constructors, Error handling, Scoping, Overloading, Multiple inheritance, Operations, serialization etc.	Advanced OO concepts	T1: Ch.3; and class notes
10-12	To understand the structure of a class in Java.	Introducing classes	T2: Ch.6
13-15	To understand how to add methods to classes.	More on Methods and Classes	T2: Ch.7
16-17	To understand the concepts related to inheritance supported by Java and to learn how to design programs that use inheritance.	Inheritance	T2: Ch.8
18-21	To learn Java Exception handling mechanism	Exception Handling	T2: Ch.10
22-25	To understand multithreading concepts and apply it through Java programming	Multithreaded Programming	T2. Ch.11
26-28	To learn and work with IO streams in Java; and to understand the process of Object serialization supported by Java	Input and Output Model	T2. Ch.13 & 21
29-30	To understand how to process strings in Java, using libraries	String Handling in Java	T2. Ch.17
31-32	To study some important Classes in java.lang package	Exploring java.lang	T2: Ch.18
33-34	To understand some important Classes in java.util package including Java Collection framework	Exploring java.util package and Collection Framework	T2. Ch.19 & 20
35-38	Introducing students to Object Oriented Analysis and Design activity in the context of UML	Process of Object Oriented Design and UML	T1: Ch.10; R1: Ch. 2-5; R2 for UML notations; and Class notes
39-40		Object Oriented Design Patterns	T1: Ch.15 and Class notes

41	To get an overview of other popular Object Oriented Programming Languages	Object oriented Programming languages (overview)	Class notes
42		Conclusion to the course	

6. Evaluation

Component	Duration	Date & Time	Weightage	Nature of Component
Mid-semester Test	90 Mins.	17/03 4.00 - 5.30PM	35%	Closed Book
Mini-project (Out of 15% weightage, 5% evaluation will be completed before Mid-semester grading)	Take home	To be announced	15%	Open Book
End-semester Lab Exam	60 Mins.	To be announced	10%	Open Book
Comprehensive Exam	180 Mins.	18/05 AN	40%	Closed Book

7. Make-up Policy:
Make-up for mid semester exam and comprehensive exam will be granted **only** on genuine grounds of sickness **(***to be supported by a medical certificate and not a prescription*). There is NO makeup for other evaluation components.

8. Course Notices
All notices pertaining to this course will be displayed on the CMS.

9. Chamber Consultation: To be announced.

10. **Academic Honesty and Integrity Policy**: Academic honesty and integrity are to be maintained by all the students throughout the semester and no type of academic dishonesty is acceptable.

Dr. Abhijit Das
Instructor-In-Charge, CS F213