



## **Birla Institute of Technology & Science, Pilani** Hyderabad Campus

### **FIRST SEMESTER 2022-2023** **Course Handout – Part II**

**Date: 29.08.2022**

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. R. Gururaj**

**Other Instructors : Dr. Subhrakanata panda, Dr. Abhijit Das, Dr. Aneesh Sreevallabh Chivukula, Prerna Saurabh, Deepa Kumari, Mandan Naresh**

#### **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, 11<sup>th</sup> Edition, Herbert Schildt, Tata McGraw Hill Publishing.

2019.

#### 4. Reference Books:

**R1.** Object Oriented Analysis and Design with Applications, Grady Booch, Addison Wesley, 2<sup>nd</sup> 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	
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## 6. Evaluation

Component	Duration	Date & Time	Weightage	Nature of Component
Mid-semester Test	90 Mins.	02-11-2022 (11-00AM to 12-30PM)	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.	11-12-2022; Sun (FN)	10%	Open Book
Comprehensive Exam	180 Mins.	22-12-2022 AN	40%	Closed Book

## 7. Make-up Policy:

Make-up will be given for genuine cases with prior permission by IC.

## 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.

**Prof. R Gururaj**  
Instructor-In-Charge, CS F213