Birla Institute of Technology & Science, Pilani
Hyderabad Campus

SECOND SEMESTER 2020-21
COURSE HANDOUT (PART II)

Date: 16/01/2021

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. S. Panda**
Instructors	**:** Dr. D V N Sivakumar, Dr. Ayan Das, Ms. Deepa Kumari, Ms. T Sahithi

1. Scope of the course:

The scope of this course includes basics of Object-Oriented Concepts; Fundamentals of Object model; Essential features of Object model; Classes and Objects; Operations/Methods and Messages; Abstraction mechanism; Inheritance; Polymorphism; Multithreading; Exception handling; I/O; Event handling; Object serialization; Process of Object Oriented Design; Design Patterns; Brief introduction to other Object Oriented Applications (other than Java). Important point to be noted is that the important Object Oriented Concepts like- Exceptions, Multithreading, IO etc., are understood by working with Java.

2. Course objectives:

- Provide the student with 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).
- To gain basic knowledge on Object Oriented Analysis & Design methodology, and notations in modeling.
- To get a rough idea about Object Oriented Design Patterns.

3. Text Book:

T1: Object Oriented Design and patterns, Cay Hortsmann, Wiley, 2004.

4. Reference Books:

R1. The Complete Reference- Java, 5th Edition, Herbert Schildt, Tata McGraw Hill Publishing.

R2. Object Oriented Analysis and Design with Applications, Grady Booch, Addison Wesley, 2nd Edition.

R3. 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.

R4. Java How to Program, Paul Deitel, Harvey Deitel, Pearson Education, 10th Edition, 2018

5.Lecture Schedule:

Lecture No.	Learning Objectives	Topics Covered	Chapter in the Text Book
		MODULE-1	
1	Getting introduced to the course content, evaluation components, objectives, and outcomes.	General introduction to the course	-
2-4	To understand the need for Object Orientated Programming Paradigm	Introduction to Object Oriented Analysis and Design, Concepts and Principles	T1- Ch.2&3; R2-Ch. 2-5; R3 for notations; and Class notes
5- 7	To learn the fundamentals of Object model in terms of classes and methods	Object Model	T1-Ch.2 ; R2- Ch.2
		Classes and Objects	T1- Ch.2&3; R1-Ch.6,7; R2-Ch.3
		Classification and Abstraction mechanism , Encapsulation and Data hiding	T1.Ch.2; R2- Ch.4; T1-Ch.3; R1.ch.2; and Class notes
		Methods and Messages	T1.Ch.3; R1-Ch.6,7 ; R2-Ch.3; and Class notes
8-10	To understand the basics of class hierarchies in Object Orientation	Packages, Inheritance and Polymorphism and Interfaces	T1 –Ch.6; R1.Ch.7&8; R4-Ch.10
Self-Study	To understand the use of Selection Statements	If statements, Nested if statements, Boolean expressions and variables, comparing objects, switch statements	R1-Ch.5
Self-Study	To understand the use of Repetition Statements	While statement, do-while statement, for and nested for statements, estimating the execution time, recursive methods (To be discussed in Tutorial classes)	R1-Ch.5
10-11	To understand and apply characters and string concepts for problem solving	Characters, strings, comparing strings, string Buffer and string Builder, Pattern matching and regular expressions.	R1- Ch.13, Ch.24; R4 – Ch. 14
12-14	To understand and apply array and collection framework classes for problem solving	Array basics, array of objects, for-each loop, passing arrays to methods, 2D-arrays, Collection Framework.	R1-Ch.3, Ch.15; R4- Ch. 7
15-16	To understand and apply sorting and searching mechanisms	Searching methods, sorting methods, Heap sort	Class Notes; R4-Ch.19
		MODULE-2	
17-19	To learn Java Exception handling mechanism and assertions	Catching exceptions, throwing exceptions and multiple catch blocks, propagating exceptions, Types of exceptions, programmer-defined exceptions, Assertions.	T1.Ch.1.8; R1-Ch.10; R4-Ch. 11, Class Notes
20-25	To create GUI programming	GUI Components and Event Handling mechanisms	R1-Ch. 12, Ch.20, Ch.21
26-27	To handle Graphics in Java	Graphics	R4-Ch.13

28-30	To understand multithreading concepts and apply it through Java programming and work with IO streams in Java	Multithreading and Synchronization concepts	T1 –Ch.9; R1- Ch.11; and class notes
		I/O Streams	R1- Ch.13 and Ch.19
		Object Serialization	T1.Ch.7.5; R2- Ch.19
31-32	To learn and apply different design patterns	Object Oriented Design Patterns	T1- Ch.5&11
MODULE-3			
33-34	To be able to access Databases with JDBC	JDBC connection	R4-Ch.24
35-39	To understand the principles of testing OOPs	Testing and Debugging OOP	Class Notes
40-42	To learn Python	Introduction to Python Programming	Class notes

5. Evaluation

Component	Duration (mins)	Mode	Date & Time	Weightage
Mid-Semester	90	Open Book	03/03 3.30 - 5.00PM	35%
Quiz (1)		Open Book	PRE-MID SEMESTER	10%
LAB Project (LP)		Open Book	To be Announced in Course Portal	15%
Comprehensive	120	Open Book	08/05 FN	40%

6. Make-up Policy

No make-up for CLE, LP components. No makeup exam allowed without prior permission. Rules and regulations of AUGSD is to be strictly followed.

7. Course Notices

All notices pertaining to this course will be displayed on the Course portal (CMS).

8. Chamber Consultation

To be announced.

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.