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**FIRST SEMESTER 2021-22**

**COURSE HANDOUT (PART II)**

**Date: 20/08/2021**

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. D V N Siva Kumar**

**Instructors  :** Prof. R Gururaj, Prof. Aruna Malapati, Ms. Deepa Kumari, Mr. Pattiwar Shravan Kumar, Ms. T Sahithi and Mr. Chillara Anil Kumar

**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; Exception handling; Multithreading; I/O; Event handling; Object serialization; Process of Object Oriented Design; Design Patterns. 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:**

* To 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 patterns.

## 3. Text Book:

**T1:** Object Oriented Design and Patterns, 2nd Edition, Cay Hortsmann, Wiley, 2005.

**4. Reference Books:**

**R1.** The Complete Reference- Java, 11th Edition, Herbert Schildt, McGraw-Hill, 2019.

**R2.** Object Oriented Analysis and Design with Applications, 3rd Edition, Grady Booch, R. A. Maksimchuk, M.W. Engle, B.J. Young, Jim Connalen, K.A. Houston, Addison- Wesley, 2007.

**R3.** The Unified Modeling Language User Guide, 2nd Edition, Grady Booch, James Rumbaugh, Ivar Jacobson, Pearson, 2017.

**R4.** Java How to Program, 11th Edition, Paul Deitel, Harvey Deitel, Pearson, 2017.

**5.Lecture Schedule:**

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| **Lecture No.** | **Learning Objectives** | **Topics to be 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 | - |
| **2-6** | To understand the need for Object-Orientated Programming Paradigm | Introduction to Object-Oriented Paradigm | T1- Ch.2&3; R2-Ch. 2-4; and Class notes |
| **7- 10** | 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 | T1.Ch.3; R1-Ch.6,7 ; R2-Ch.3; and Class notes |
| **11-15** | To understand the basics of class hierarchies in Object Orientation | Packages, Inheritance, Polymorphism and Interfaces | T1 –Ch.6; R1.Ch.8&9; 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 |
| **16-19** | 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.17; R4 – Ch. 14 |
| **20-22** | 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 |
| **MODULE-2** | | | |
| **23-27** | To understand and apply array and collection framework classes for problem solving | Array basics, array of objects, for-each loop, 2D-arrays, searching, sorting, Collection Framework: Iterators, ArrayList and HashMap. | R1-Ch.3, Ch.19; R4- Ch. 7 |
| **28-30** | To understand multithreading concepts and apply it through Java programming. | Multithreading and Synchronization concepts | T1 –Ch.9; R1- Ch.11; and class notes |
| **31-33** | To understand and apply IO stream classes for problem solving | I/O Streams | R1- Ch.13 and Ch.21 |
| Object Serialization | T1.Ch.7.5; R2- Ch.19 |
| **34-37** | To create GUI based applications. | GUI components and Event handling mechanisms | R1-Ch. 24, Ch.25, Ch.26 |
| **38-41** | To learn and apply different design patterns | Object Oriented Analysis and Design Patterns | T1- Ch.5, Ch.6; R3- Ch.12, Ch.13, Ch.14 |
| **42** | To be able to access Databases with JDBC | JDBC connection | R4-Ch.24 |

**6. Evaluation**

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| --- | --- | --- | --- | --- |
| **Component** | **Duration** | **Date & Time** | **Weightage** | **Nature of Component** |
| Mid-Semester | 1.5 Hrs. | To be announced by TT Division | 30% | Open Book |
| Quiz (1 No.) | 30 mins | Pre Mid semester | 10% | Closed Book |
| Continuous Lab Evaluation (CLE) |  | Weekly Lab Assignments to be given by the Instructors based on various topics covered in the LAB. | 5% | Open Book |
| Lab Project (LP) |  | To be Announced in Course Portal | 15% | Open Book |
| Comprehensive | 2 Hrs. | 27/12 FN | 40% | Open Book |

**7. Make-up Policy**

No make-up for CLE, LP. For any other genuine reasons other than medical, prior approval from the IC is mandatory. Requests coming after the test will not be honored. Guidelines by AUGSD will be followed in this regard***.*** The above mentioned rules will be followed very strictly.

**8. Course Notices**

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

**Instructor-In-Charge,**

**CS F213**