**ODD 2021 - Lecture Plan**

**Object-Oriented Analysis and Design using JAVA (20B12CS334)**

**Course Coordinator –Dr. Raju Pal and Prof. Sandeep Kumar Singh**

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| **Week** | **Lecture #** | **Topics to be Discussed** |
| July 28, 2023 | Lecture 1 | Programming Paradigms, Introduction to Object Oriented Paradigm, Principles of Object Orientation |
| July 31- Aug. 5, 2023 | Lecture 2 | Software Complexity: Benefits and Understanding the challenges OOAD can address, Overview of Software Development Life Cycle (SDLC) & Rational Unified Process (RUP), |
| Lecture 3 | Object-Oriented Requirements Elicitation & Analysis and Systems Behavior, Abstract Data Types |
| Lecture 4 | Abstract Data Types |
| Aug. 07-12, 2023 | Lecture 5 | Identifying Classes and Objects |
| Lecture 6 | Responsibilities, Relationships in problem domain |
| Lecture 7 | Object Model |
| Aug. 14-19, 2023  **One holiday** | Lecture 8 | Methods of Class Identification |
| Lecture 9 | Listing of Synonyms, Nouns and Verbs |
| Aug. 21-26, 2023 | Lecture 10 | Identification of Attributes |
| Lecture 11 | Identification of Methods |
| Lecture 12 | Discussion on different case scenarios |
| Aug. 28- Sep 02, 2023  One holiday | Lecture 13 | UML structure: Overview of static and dynamic UML diagrams |
| Lecture 14 | Modeling System Behavior with use case diagram and notations, From Use Cases to Functional Requirements |
| Sep. 04-09, 2023  **One holiday** | **T1 Examination** | |
| Sep. 11-16, 2023 | Lecture 15 | Elements of object and class diagram with notations: object, class, link, association, multiplicity, link attributes, association end names, |
| Lecture 16 | Elements of object and class diagram with notations: association classes, qualified association, association ends, N-ray association, aggregation and composition, generalization, abstract class |
| Lecture 17 | Objects and Classes in JAVA |
| Sep. 18-23, 2023 | Lecture 18 | Implementing various relationships in JAVA- Association |
| Lecture 19 | Implementing various relationships in JAVA- Inheritance, |
| Lecture 20 | Implementing various relationships in JAVA- generalization, |
| Sep. 25-30, 2023 | Lecture 21 | Implementing various relationships in JAVA- Abstraction in Java, |
| Lecture 22 | Implementing various relationships in JAVA- Method Overriding and Overloading |
| Lecture 23 | Implementing various relationships in JAVA- Object Roles, Class Types |
| Oct. 02-07, 2023  One holiday | Lecture 24 | Implementing various relationships in JAVA- Implementing Polymorphism, |
| Lecture 25 | Implementing various relationships in JAVA- Extensibility and UML |
| Oct. 09-14, 2023 | Lecture 26 | Implementing various relationships in JAVA- Generalization with Interfaces and Packages in Java |
| Lecture 27 | Sequence & Collaboration diagram with notations, Object Collaborations, Interaction Diagrams |
| Lecture 28 | State Diagram - Event ,Change Event, Signal Event, Call Event, Time Event , States, Transition & Conditions, Transition, Guard Condition, |
| Oct. 16-21, 2023 | **T2 Examination** | |
| Oct. 23-28, 2023  One holiday | Lecture 29 | State Diagram - Action, State Diagrams, One shot State Diagram, Creating State Diagram, State Diagram Behaviour, |
| Lecture 30 | Activity, Do-activity, Entry Activity, Exit Activity, Nested State Diagram, Nested States, Signal Generalization, Concurrency, Activity and Swim lane diagram, Elements of Component and deployment Diagram Object Constraint Language(OCL) |
| Oct. 30- Nov 04, 2023 | Lecture 31 | Design Principles: SOLID principles |
| Lecture 32 | Design Principles: Cohesion, Coupling, |
| Lecture 33 | Design Principles: techniques for good Object-Oriented design, |
| Nov. 06- 11, 2023 | Lecture 34 | Design Principles: separation of concerns, |
| Lecture 35 | Design Principles: information hiding |
| Lecture 36 | Design Principles: conceptual integrity |
| Nov. 13- 18, 2023  **Diwali break** | Lecture 37 | OO Design Metrics: Understanding Design Metrics |
| Nov. 20- 24, 2023 | Lecture 38 | OO Design Metrics: Analyzing Software Design Metrics |
| Lecture 39 | OO Design Metrics: System-level metrics |
| Lecture 40 | OO Design Metrics: Coupling and Inheritance metrics |
| Nov. 27- Dec 02, 2023 | Lecture 41 | OO Design Metrics: Class and method metrics |
| Lecture 42 | Exam preparation and project evaluations |
| Lecture 43 | Exam preparation and project evaluations |
| Dec. 04-12. 2023 | **End Term Examination** | |