

Object Oriented Design and Modeling through UML (3-1-3)

Evaluation:

	Theory	Practical	Total
Sessional	30	20	50
Final	50	-	50
Total	80	20	100

Course Objectives:

- To explain and illustrate the fundamental concepts of object orientation
- To introduce basic concepts of object-oriented analysis and design.
- To study the main features of the software development process in an object-oriented framework.
- To provide exposure to Visual Object Oriented Modeling languages, specifically UML (Unified Modelling Language).
- To develop skills on verifying, and validating a given specification presented in UML
- To develop a specification and implementation using UML from a given system requirements description.

Course Contents:

- 1. Object Oriented Fundamentals** 10 hrs
 - 1.1. Introduction
 - 1.2. Object Oriented Analysis and Design
 - 1.3. Defining Models
 - 1.4. Case Study
 - 1.5. Requirement Process
 - 1.6. Use Cases
 - 1.7. Object Oriented Development Cycle
 - 1.8. Overview of the Unified Modeling Language: UML Fundamentals and Notations
- 2. Object Oriented Analysis** 12 hrs
 - 2.1. Building Conceptual Model
 - 2.2. Adding Associations and Attributes
 - 2.3. Representation of System Behavior
- 3. Object Oriented Design** 14 hrs
 - 3.1. Analysis to Design
 - 3.2. Describing and Elaborating Use Cases
 - 3.3. Collaboration Diagram
 - 3.4. Objects and Patterns
 - 3.5. Determining Visibility
 - 3.6. Class Diagram
- 4. Implementation** 9 hrs
 - 4.1. Programming and Development Process
 - 4.2. Mapping Design to Code
 - 4.3. Creating Class Definitions from Design Class Diagrams



- 4.4. Creating Methods from Collaboration Diagram
- 4.5. Updating Class Definitions
- 4.6. Classes in Code
- 4.7. Exception and Error Handling

Laboratory Exercises:

Laboratory Exercise will include implementing all the UML diagrams and handling a object oriented design and modeling activity in a ACSE Environment. UML pattern design and modeling will be taken up with the help of *Rational Studio 2000* or any other CASE tools.

Text Book:

Larman, C., *Applying UML and Patterns*, Pearson Education Asia, ISBN: 81-7808-336-1

References:

1. Stevens, P., Pooley, R., *Using UML: Software Engineering with Objects and Components*, Addison-Wesley, 1999, ISBN: 981-2359-15-X
2. Fowler, M., Scott, K., *UML Distilled: Applying the Standard Object Modeling Language*, Addison-Wesley, 1997, ISBN: 981-4053-59-7
3. Booch, G., Jacobson, I., Rumbaugh, J., *The Unified Software Development Process*, Addison-Wesely, 1998, ISBN: 981-235-873-0
4. Booch, G., Jacobson, I., Rumbaugh, J., *The Unified Modeling Language User Guide*, Addison-Wesely, 1998, ISBN: 981-4053-31-7
5. Jacobson I., *Object-Oriented Software Engineering – A Use Case Driven Approach*, , Addison-Wesely, 1998, ISBN: 981235994X
6. Richter C., *Designing Flexible Object-Oriented Systems with UML*, Techmedia, 2000, ISBN: 81-7635-398-1
7. Booch, G., *Object-Oriented Analysis & Design*, Pearson Education Asia, 2000, ISBN: 81-7808-156-3

