Object Oriented Software Development (3 – 0 – 2)

Evaluation:

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

Course Objectives:

This course enables students to convert the information gained about object oriented Software Engineering into knowledge. This course provides general overview of design and architectural patterns and practical approaches to Software Engineering Process.

Course Contents:

1. Introduction **4 hrs**

1.1 Review of Object Oriented Analysis and Design

1.2 Review of UML

2. Iterative and Incremental Development **14 hrs**

2.1. Phases(inception, elaboration, construction and transition)

2.2. Unified Software Development Process disciplines. iterations and activity

- 2.2.1. Business modeling
- 2.2.2. Requirement analysis
- 2.2.3. Design
- 2.2.4. Implementation
- 2.2.5. Test
- 2.2.6. Deployment
- 2.2.7. Configuration and change management
- 2.2.8. Project management
- 2.2.9. Environment

2.3. Models evolution through the iterations

- 2.3.1. Use case model
- 2.3.2. Analysis model
- 2.3.3. Design model
- 2.3.4. Deployment model
- 2.3.5. Implementation model
- 2.3.6. Test model
- 2.3.7. Use Case Driven Process/ Use Case Realization
- 2.3.8 Role and responsibilities of people through the iterations

3. Design Patterns **15 hrs**

3.1. Introduction to Design Patterns

3.2. Programming paradigm versus Design patterns

3.3. Importance of Design Pattern

3.4. Classification of Design patterns
  3.4.1 Creational patterns
  3.4.2 Structural Patterns
  3.4.3 Behavioral Patterns
  3.4.4 Other Patterns - Concurrency Patterns, Data Access Patterns, Enterprise Patterns, Real-Time Patterns
3.5. Documenting and Describing Patterns
3.6. Criticism

4. Software Architecture **12 hrs**

4.1. Introduction to Software Architecture
4.2. Architecture centric process
4.3. Architectural tactics and patterns
  4.3.1 The Multi-Layer architectural pattern
  4.3.2 The Client/Server and other distributed architectural patterns
  4.3.3 The Model/View/Controller (MVC) architectural pattern
  4.3.4 The Service-Oriented architectural (SOA) pattern
  4.3.5 The Message-Oriented architectural pattern

Laboratory:

The laboratory work shall focus on the implementation aspect of the concepts covered in the lecture class .These include implementation of UML, Design, Architecture Patterns and using Unified Software Development Process. Students shall develop a project using above mentioned concepts.

References:

1. Lethbridge, T. C., & Laganiere, R. (2004). *Object-Oriented Software Engineering: Practical Software Development Using UML and Java.* Mc Graw Hill.
2. Larman, C. (2008). *Applying UML and Patterns.* Pearson Education.
3. Jacobson, I., Christerson, M., Jonsson, P., & Overgaard, G. (2009). *Object Oriented software Engineering.* Pearson Education.
4. Jacobson, I., Booch, G., & Rumbaugh, J. (2003). *The Unified Software Development Process.* Pearson Education.