IT 227: Object Oriented Analysis and Design

Credits: 3
Lecture Hours: 48

Course Objective

The main objective of this course is to acquaint students about technical approach for analyzing, designing and application, system, or business by applying the object oriented paradigm and visual modeling throughout development life cycles to foster better stakeholder communication and product quality.

Course Description

This course contains introduction to object oriented analysis and design, elaboration, System sequence diagrams, GRASP, UML state diagrams and modeling.

Course Details

Unit 1: Introduction   **LH 9**

Introduction to OOAD – concept of OOAD? – Concept of UML, What are the United process(UP) phases – Inception – Use case Modeling – Relating Use cases – include, extend and generalization

Unit 2: Elaboration   **LH 10**

Concept, Domain Models – Finding conceptual classes and description classes – Associations – Attributes – Domain model refinement – Finding conceptual class hierarchies – Aggregation and Composition – UML activity diagrams and modeling

Unit 3: System Sequence Diagrams   **LH 10**

Concept, Relationship between sequence diagrams and use cases Logical architecture and UML package diagram – Logical architecture refinement – UML class diagrams – UML interaction diagrams

Unit 4: GRASP   **LH 10**

Concept, Designing objects with responsibilities – Creator – Information expert – Low Coupling – Controller – High Cohesion – Designing for visibility – Applying GoF design patterns – adapter, singleton, factory and observer patterns

Unit 5: UML State Diagrams and Modeling   **LH 9**

Concept – Operation contracts – Mapping design to code – UML deployment and component diagrams

Text Books

Craig Larman, *"Applying UML and Patterns: An Introduction to Object – Oriented Analysis and Design and Iterative Development",* Third Edition, Pearson Education, 2005

References

Mike O' Docherty,*"Object – Oriented Anlaysis & Design: Understanding SystemDevelopment with UML 2.0",* John Wiley & Sons, 2005.2. James W-Cooper, Addison-Wesley, *"Java Design Patterns – A Turorial",* 2000.

Micheal Blaha, James Rambaugh, *"Object-Oriented Modeling and Design with UML",* Second Edition, Prentice Hall of India Private Limited, 2007.

Erich Gamma, Richard Helm, Ralph Johnson, John Vlissides, *Design Patterns: Elements of Reusable Object-Oriented Software",* Addison-Wesley, 1995