**20CSA602 SOFTWARE ENGINEERING AND DESIGN PATTERNS 3 0 0 3**

**COURSE OUTCOMES**

CO1: Deliver quality software products by possessing the leadership skills as an individual or contributing to the team development and demonstrating effective and modern working strategies by applying both communication and negotiation management skill.

CO2: Understands the concept of pattern-based analysis and design and the pattern based design principle. Learn that design patterns are solutions, and they can solve many problems that can be encountered in the future.

CO3: Understands how to apply the pattern-based analysis and design to the software to be developed. Understands the structure of design patterns and the logic of design patterns. Understands the importance of design patterns in software development.

CO4: Understands the details of object oriented programming by comparing the object-oriented programming model with the standard structured programming.

CO5: Uses the basic design principles in solving real life problems

**SYLLABUS**

Software Engineering – Introduction - Software Classification - Layered Technology – Software Process –Practice - Generic Process Model, Process Assessment and Improvement – CMMI framework - Perspective Models - Specialized Models - Agile Process Models

Requirements Engineering – SRS - Requirement Analysis- Unified Modelling Language –Approaches - Scenario based Modelling - UML Models that supplement Use Cases –

Activity and Swim lane Diagrams - Design Engineering - Architectural Design – Modelling Component level design - Performing User Interface Design.

Introduction: What Is a Design Pattern? Design Patterns in Smalltalk MVC, Describing Design Patterns, The Catalog of Design Patterns, Organizing the Catalog, How Design Patterns Solve Design Problems, How to Select a Design Pattern, How to Use a Design Pattern.

A Case Study: Designing a Document Editor : Design Problems, Document Structure, Formatting, Embellishing the User Interface.

Creational Patterns: Abstract Factory, Builder, Factory Method, Prototype, Singleton, Discussion of Creational Patterns.

Structural Pattern Part-I : Adapter, Bridge, Composite. Structural Pattern Part-II: Decorator, açade, Flyweight, Proxy.

Behavioral Patterns Part-I : Chain of Responsibility, Command, Interpreter, Iterator. Behavioral Patterns

Part-II : Mediator, Memento, Observer, State, Strategy, Template Method ,Visitor, Discussion of Behavioral Patterns.

**TEXT BOOKS/ REFERENCES:**

1. Roger S. Pressman, “Software Engineering-A Practitioner’s Approach”, Seventh Edition, Tata McGraw-Hill, 2010.

2. Ian Sommerville “Software Engineering”, Ninth Edition, 2011

3. Richard Fairley , “Software Engineering concepts”, Tata McGraw-Hill Publishing Company Pvt. Ltd., Ninth Edition

4. Pattern’s in JAVA Vol-I By Mark Grand ,WileyDreamTech.

5. JAVA Enterprise Design Patterns Vol-III By Mark Grand ,WileyDreamTech.

6. Head First Design Patterns By Eric Freeman-Oreilly-spd

Evaluation pattern

Internal 50

Mid Exam - Online 10 Viva 20

CA - 20 Quiz -5 Assignment - 5 Pattern Implementation – 10 marks

External 50

Online Exam 20 Viva 30