Prasad V. Potluri Siddhartha Institute of Technology, Kanuru, Vijayawada.

4/4 B.Tech. SECOND SEMESTER

IT8T2C   **SOFTWARE DESIGN PATTERNS**   **Credits: 4**

Lecture: 4 periods/week   **Internal assessment: 30 marks**
Tutorial: 1 period /week   **Semester end examination: 70 marks**

Objectives :

- To introduce the fundamental concepts of design patterns.

- To explain principles, practices and approaches to make good designs using design patterns.

- To solve common problems encountered in object oriented design and programming.

- To provide knowledge on various design patterns such as composite, Iterator, Observor, Factory method and strategy.

Outcomes :

Students will be able to

- Understandthe definition and the four essential components of Design Pattern
- Understand How Design Patterns Solve Design Problems
- Draw the structure, identify participants and responsibilities of various design patterns.
- Apply several appropriate patterns in the design of small programming assignments.

Syllabus

UNIT –I
 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.

UNIT-II
A Case Study: Designing a Document Editor, Design Problems, Document Structure, Formatting, Embellishing the User Interface, Supporting Multiple Look-and-Feel Standards, Supporting Multiple Window Systems, User Operations Spelling Checking and Hyphenation, Summary.

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

UNIT-IV
Structural Pattern Part-I: Adapter, Bridge, and Composite.

UNIT-V
Structural Pattern Part-II: Decorator, Façade, Flyweight, Proxy.

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

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

UNIT-VIII
What to Expect from Design Patterns, A Brief History, The Pattern Community An Invitation, A Parting Thought.

Text Books:

1. Design Patterns By Erich Gamma, Pearson Education.

Reference Books :

1. Pattern's in JAVA Vol-I By Mark Grand ,WileyDreamTech.
2. Pattern's in JAVA Vol-II By Mark Grand ,WileyDreamTech.
3. JAVA Enterprise Design Patterns Vol-III By Mark Grand ,WileyDreamTech.
4. Head First Design Patterns By Eric Freeman-Oreilly-spd.
5. Design Patterns Explained By Alan Shalloway, Pearson Education.