PRASAD V. POTLURI SIDDHARTHA INSTITUTE OF TECHNOLOGY

(Autonomous)

Kanuru, Vijayawada-520007

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING (Data Science)

III B. Tech – II Semester CSE (Data Science)

Design Patterns

Course Code	20DS4601B	Year	III	Semester	II
Course Category	PEC	Branch	CSE (Data Science)	Course Type	Theory
Credits	3	L-T-P	3-0-0	Prerequisites	Software Engineering & OOPS through JAVA
Continuous Internal Evaluation	30	Semester End Evaluation	70	Total Marks	100

Course Outcomes	
Upon Successful completion of course, the student will be able to	
CO1	Describe the fundamental concepts, principles of design patterns in software development.	L2
CO2	Apply creational and structural design patterns in developing software solutions.	L3
CO3	Apply behavioral design patterns in various software applications and architectures.	L3
CO4	Analyze software requirements and contexts to select and integrate appropriate design patterns effectively, ensuring optimal design, maintainability, and scalability of software projects.	L4

	Contribution of Course Outcomes towards achievement of Program Outcomes& Strength of correlations (3: High,2: Medium, 1: Low)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2													
CO2	3													
CO3	3											1		
CO4		3										1		

	Syllabus	
Unit No	Contents	Map ped CO
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.	CO1
II	**Creational Design Patterns:** Singleton Pattern, Factory Method Pattern, Abstract Factory Pattern, Builder Pattern, Prototype Pattern	CO1, CO2, CO4
III	**Structural Design Patterns:** Adapter Pattern, Bridge Pattern, Composite Pattern, Decorator Pattern, Facade Pattern, Flyweight Pattern, Proxy Pattern	CO1, CO2, CO4
IV	**Behavioral Design Patterns:** Chain of Responsibility Pattern, Command Pattern, Interpreter Pattern, Iterator Pattern, Mediator Pattern, Memento Pattern	CO1, CO3, CO4
V	**Behavioral Design Patterns:** Observer Pattern, State Pattern, Strategy Pattern, Template Method Pattern, Visitor Pattern	CO1, CO3, CO4

Learning Resources
Text Books
1. Design Patterns: Elements of Reusable object-oriented software, Erich Gamma, First Edition,2015, Pearson Education
Reference Books
1.Head First Design Patterns, Eric Freeman, Elisabeth Robonson, Second Edition,2020, O'Reilly Media 2. JAVA Enterprise Design Patterns, Mark Grand ,2001, Wiley DreamTech. 3. Patterns in JAVA, Mark Grand, Second Edition,2002, Wiley DreamTech.
e- Resources & other digital material
1. NPTEL Course: https://nptel.ac.in/courses/106105224 2. NPTEL Videos: https://nptelvideos.com/video.php?id=916 3. Youtube link: https://www.youtube.com/watch?v=rI4kdGLaUiQ&list=PL6n9fhu94yhUbctIoxoVTrklN3LMwTCmd