

1. Course Number and Name: 210 CPE – Object Oriented Programming

2. Credits and Contact Hours: 3 Credit

- a.Lecture – 2 day per week at 50 minutes for 16 weeks
- b.Laboratory – 1 day per week at 100 minutes for 16 weeks

3.Course Coordinator or Instructor:

Dr. J. Subash Chandra Bose, Dr.Suresh Babu

4. Text Book:

- Object oriented programming using Java, Chiragpatel, Dreamtech press, 2015
- Programming with JAVA a primer, E Balagurusamy, 3edition, McGraw-Hill Companies, 2007

5. Specific Course Information:

- a. Catalog Description:The Course covers fundamentals of object oriented programming, Introduction to Java Programming Language, Data types, Operators, Expressions, Decision making and Branching, Classes, Objects and Methods, Inheritance & Polymorphism, Multithreaded Programming, Managing Errors and Expectations.
- b. **Prerequisites:**219 CSM Data Structure and Algorithms
- c. **Status:** Required

6.Specific Goals for the Course:

a.Course Outcomes:

1. Define the fundamental principles of object oriented programming
2. Develop an ability to identify, formulate and solve problems using inheritance, polymorphism and multithreading concepts
3. Write java programs and interpret the results
4. Develop an ability to design java programs of moderate complexity
5. Develop java programming skills necessary for computer engineering practice.
6. Use object oriented concepts to develop small applications within the team.

b.Student outcomes in Criterion 3 addressed by course:

Course LOs #	Map course LOs with the program LOs. (Place course LO #s in the left column and Student LO #s across the top.)											
	Student Learning Outcomes Use LOs Codes											
	a1	a2	b1	b2	b3	b4	c1	c2	c3	c4	d1	d2
1	√											
2			√									
3				√								
4					√							
5							√					
6								√				

7. List of Topics: 210 CPE – Object Oriented Programming

List of Topics for Theory:

- **Fundamentals of Object Oriented Programming** : Introduction, Features of Object Oriented Paradigm, Basic concepts of OOPs, Objects and classes, Types of java programs, Simple Java Program, , Implementing a Java Program, Java Program Structure, Java Virtual Machine, Applications of OOP
- **Introduction to Java Programming Language:**Object oriented features, Data abstraction and Encapsulation, Inheritance, Polymorphism, Message communications, Benefits of OOP, Java Tokens, Java statements.
- **Data types, Operators, Expressions:**Constants, variables, data types, operators, expressions.
- **Classes, Objects and Methods:**Class definition, Fields and Methods declaration, creating Objects, Constructors, Static members.
- **Inheritance & Polymorphism:**Extending a class, Types of Inheritance, polymorphism, overloading & overriding Methods, visibility control.
- **Multithreaded Programming:** Creating Threads, Extending a Thread Class, Stopping and Blocking a Thread, Life cycle of a Thread, Using Thread Methods, Thread Exceptions, Thread Priority and Synchronization.
- **Managing Errors and Exceptions:** Types of Errors, Exceptions, Syntax of Exception Handling Code, Multiple Catch Statements, Using Finally Statement, Throwing our own Exceptions.

List of Topics for Laboratory:

- Introduction to Java SDK toolkit, Jcreator
- Simple java program and execution. Correct errors if any.
- Java program with comments and language style
- Java program to add of two numbers
- Java program to input numbers from keyboard and add two numbers
- Java programs to demonstrate basic data types and expressions , arithmetic operations, evaluate expressions
- Java Control Structures – Programs for Conditional Statements
- Java Control Structures – Programs for Loops
- Java programs for arrays – single & Multidimensional Arrays, Sting manipulation
- Java programs implementing class, objects, constructors
- Java programs to show constructor overloading, Static members
- Java programs for Single Inheritance, Multilevel Inheritance, Method Overloading, Method Overriding
- Java program for Multithreaded Programming
- Java program implementing Exception handling