INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal, Hyderabad – 500043

COMPUTER SCIENCE AND ENGINEERING

List of Laboratory Experiments

PROGRAMMING WITH OBJECTS LABORATORY								
Course Code	**Category**	**Hours / Week**			**Credits**	**Maximum Marks**		
AITC03	**Foundation**	**L**	**T**	**P**	**C**	**CIA**	**SEE**	**Total**
		0	0	3	1.5	30	70	100
Contact Classes: Nil	**Tutorial Classes: Nil**	**Practical Classes: 36**				**Total Classes:36**		
Branch: CSE	**Semester: III**	**Academic Year: 2021-22**				**Regulation: UG20**		

Course overview:

The course covers object-oriented programming paradigm. Topics covered includes object-oriented concepts such as abstraction, inheritance, and polymorphism for demonstrating real world entity representation and creation of reusable software components. The main objective of the course is to teach the students how identify and implement object-oriented concepts, file handling and web page design and establishing access with databases from java programs. This course reaches to student by power point presentations, lecture notes, and lab which involve the problem solving in mathematical and engineering areas.

Course objectives:

The students will try to learn:

1. The object-oriented programs in java.
2. The implementation of java programs for demonstrating object-oriented concepts such as abstraction, inheritance and polymorphism.
3. The demonstration of file accessing and web-based user interface creation.
4. Database connectivity in java and implement GUI applications.

Course outcomes:

After successful completion of the course, students will be able to:

CO1 Make use of operators, precedence of operators, associativity while evaluating expressions in program statements.

CO2 Make use of the concept of class and objects with access control and polymorphism techniques to represent real world entities.

CO3 Demonstrate design principles including information hiding, encapsulation and exceptional handling.

CO4 Implement the concepts of multi-threading and files in soft real time systems.

CO5 Demonstrate file handling techniques in java programming.

CO6 Design event-driven programming principles for developing programs using graphical user interface.

WEEK NO	EXPERIMENT NAME	CO
WEEK – I	**BASIC PROGRAMS** a. Try debug step by step with small program of about 10 to 15 lines which contains at least one if else condition and a for loop. b. Write a java program that prints all real solutions to the quadratic equation ax2+bx+c=0. Read in a, b, c and use the quadratic formula. c. The Fibonacci sequence is defined by the following rule. The first two values in the sequence are 1 and every subsequent value is the sum of the two values preceding it. Write a java program that uses both recursive and non-recursive functions	**CO1**
WEEK – II	**MATRICES, OVERLOADING, OVERRIDING** a. Write a java program to multiply two given matrices. b. Write a java program to implement method overloading and constructors overloading. c. Write a java program to implement method overriding.	**CO1**
WEEK – III	**ABSTRACT CLASS** a. Write a java program to check whether a given string is palindrome.	**CO2**

	b. Write a java program for sorting a given list of names in ascending order. c. Write a java program to create an abstract class named Shape that contains two integers and an empty method named print Area (). Provide three classes named Rectangle, Triangle and Circle such that each one of the classes extends the class Shape. Each one of the classes contains only the method print Area () that prints the area of the given shape.	
WEEK – IV	**INTERFACE** Write a program that creates a user interface to perform integer division. The user enters two numbers in the text fields, Num1 and Num2. The division of Num1 and Num2 is displayed in the Result field when the Divide button is clicked. If Num1 and Num2 were not integers, the program would throw a Number Format Exception. If Num2 were zero, the program would throw an Arithmetic Exception Display the exception in a message dialog box.	**CO2**
WEEK – V	**MULTITHREADING** a. Write a java program that implements a multi-thread application that has three threads. First thread generates random integer every 1 second and if the value is even, second thread computes the square of the number and prints. If the value is odd, the third thread will print the value of cube of the number. b. Write a java program that correct implements of producer consumer program.	**CO4**
WEEK – VI	**FILES** a. Write a java program that reads a file name from the user, and then displays information about whether the file exists, whether the file is readable, whether the file is writable, the type of file and the length of the file in bytes. b. Write a java program that displays the number of characters, lines and words in a text file. c. Write a java program that reads a file and displays the file on the screen with line number before each line.	**CO5**
WEEK – VII	**FILES** a. Suppose that table named table.txt is stored in a text file. The first line in the file is the header, and the remaining lines correspond to rows in the table. The elements are separated by commas. Write a java program to display the table using labels in grid layout. b. Write a java program that connects to a database using JDBC and does add, delete, modify and retrieve operations.	**CO5**
WEEK –VIII	**JAVA PROGRAM WITH DATABASE** a. Write a java program that loads names and phone numbers from a text file where the data is organized as one line per record and each field in a record are separated by a tab (/t). It takes a name or phone number as input and prints the corresponding other value from the hash table. Hint: Use hash tables. b. Implement the above program with database instead of a text file.	**CO5**
WEEK - IX	**FILES** a. Write a java program that takes tab separated data (one record per line) from a text file and insert them into a database. b. Write a java program that prints the metadata of a given table.	**CO5**
WEEK - X	**TRAFFIC LIGHT** Write a java program that simulates a traffic light. The program lets the user select one of three lights: Red, Yellow or Green with radio buttons. On selecting a button an appropriate message with –STOP‖ or –READY‖ or ‖GO‖ should appear above the buttons in selected color. Initially, there is no message shown.	**CO2**

WEEK – XI	**MOUSE EVENTS**	**CO6**
	a. Write a java program that handles all mouse events and shows the event name at the center of the window when a mouse event is fired. Use adapter classes. b. Write a java program to demonstrate the key event handlers.	
WEEK – XII	**CALCULATOR**	**CO6**
	Write a java program that works as a simple calculator. Use a grid layout to arrange buttons for the digits and for the +,-,*, % operations. Add a text field to display the result. Handle any possible exception like divided by zero.	
WEEK – XIII	**APPLET**	**CO6**
	a. Develop an applet that displays a simple message. b. Develop an applet that receives an integer in one text field and computes its factorial value and returns it in another text field, when the button named –compute‖ is clicked	