**Advanced Object Oriented Programming Laboratory (15UCSL605)**

**Semester: VI (A & B Divisions) Academic Year 2017-18**

**Faculty In-charge: Indira R. Umarji**

**Course Learning Objective:** This course is at undergraduate level for 1.5 credits with the following learning objective:

Develop applications in Java programming language for any business, scientific and engineering domain on each of the following outcomes as a separate exercise or a single system.

**Course outcomes:** At the end of this course, students will be able to:

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| **Cos** | **Description of course outcomes** | **Mapping to Program Outcomes at different levels** | | |
| **Substantial**  **(3)** | **Moderate (2)** | **Low**  **(1)** |
| **CO-1** | **Develop** applications through CORE JAVA features like: Events, Exceptions, built-in java objects, Streams, Threads, and Frameworks. | 2, 3 | 14, 15 | 1 |
| **CO-2** | **Build** appropriate graphical user interface for a given problem specification. | 2, 3 | 14, 15 | 1 |
| **CO-3** | **Use** generics in java to create generics classes for different algorithms. | 14 | 3 | 1 |
| **CO-4** | **Use** appropriate driver classes to connect back end databases and perform database operations required as per problem specification. | 14 | 13 | 15, 1 |
| **CO-5** | **Write** Java programs to explore networking capabilities and **build** applications. | 3 | 5, 14 | 1, 2 |
| **CO-6** | **Acquire** knowledge of java language features like: Servlets, JSP, AJAX and JavaScript to**write** web-based applications. | 3, 14 | 2, 13 | 1, 5, 15 |
| **CO-7** | **Write** Test-cases/Scripts to **verify** the correctness of the program. | 4, 15 | - | 1 |

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| **Pos** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| **Cos** | 2.5 | 2.8 | 3 | 1.5 | - | - | - | - | - | - | - | - | 2 | 2.5 | 1.8 | - |

**Term works (TWs)**

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| **TW** | **Problem Description** | **CO’s** | **Deadline for TW** |
| **1** | **Using** state diagram, **design** and **describe** the behavior of STACK which contains maximum of FOUR integer elements.  Implement the above design in JAVA Programming Language. Design the TEST-DRIVER class to include minimum number of TEST CASES to test the complete features of STACK class designed.  **Expected Learning:** How to define the class, Use of Instance Variables, data types, operators, control structures, Understanding of access specifies, Declaring methods, parameterized methods, constructor, Interface, finalize() method, Compilation procedures, use of package, class path and other basic features. | **CO 1** | 12th Feb to 17th Feb, 2018 |
| **2** | **Create** an appropriate GUI which allows the user to select an item from the menu. When draw menu item is selected, draws the selected shape(Allowed shapes are: Circle, Rectangle & Triangle) in drawing area by getting appropriate dimensions of the selected shape from the user through keyboard entry, using the concept of ABSTRACT CLASS, INHERITANCE and DYNAMIC DISPATCH features of JAVA Programming Language.  The code must be robust for all possible erroneous input conditions, displaying appropriate error messages in message window specially designed for them.  **Expected Learning**: Abstract class, Inheritance, Runtime polymorphism, AWT, Event Handling, Exception Handling. | **CO 2** | 26th Feb to 3rd Mar, 2018 |
| **3** | **Write** a Java program to simulate LOST UPDATE or INCONSISTENT READ Transaction issues of database using MULTITHREADING features of JAVA.  Also write a java program to control the above concurrency issue. Output of the program to be displayed on the screen as well as to be written in a file of user choice.  **Expected Learning**: Multithreading and Streams of java language | **CO 1** | 5th Mar to 10th Mar, 2018 |
| **4** | **Design** and **Implement** an APPLET for any computer game of your choice. Store the user name and the score of each game session in the database (MySQL).  **Expected Learning**: Applet life cycle, Java Database connectivity, events, AWT/SWING components, Application Design and Implementation. (May use Generics) | **CO 1, 2, 3** | 19th Mar to 24th Mar, 2018 |
| **5** | **Write** a Java program to implement 1-1 text chatting using Networking features.  **Expected Learning**: Networking, Application Design and Implementation. | **CO 4** | 2nd Apr to 7th Apr, 2018 |
| **6** | **Write** a Java program to read a string from command line argument and return an object containing string length, upper case version for the given string, reverse of the given string. Use RMI method to implement the same.  **Expected Learning**: Networking, Application Design and Implementation. | **CO 5, 6** | 16th Apr to 21st Apr, 2018 |
| **7** | **Using** SERVLETS, JSP and Database, Javascript, AJAX (any database on cloud) connectivity features of JAVA language, implement a web based search tool that facilitates the searching of all possible books available in the department for a given subject. Search for a single book at a time is allowed. Results are to be displayed in the TABLE form. Any suitable assumption that is convenient for system development may be done.  **Expected Learning:** Servlets, JSP, JavaScript, AJAX and Database Connectivity. | **CO 4** | 30th Apr to 5th May, 2018 |

**Lab Internals from 7th May to 12th May, 2018**

Faculty In-charge

Prof. Indira R. Umarji