**COURSE STRUCTURE**

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| **Course Code** | **MIT-WPU-BCS**  **2301** | | | |
| **Course Category** | **Core Computer Science** | | | |
| **Course Title** | **Advanced Java** | | | |
| **Teaching Scheme and Credits**  **Weekly load hrs.** | **L** | **T** | **Laboratory** | **Credits** |
| **3** | **1** | **--** | **2** |
| **Pre-requisites**:  1. Knowledge of C or C++ Programming Language  2. Knowledge of classes, objects, streams, Exception handling and file handling in Java. | | | | |
| **Course Objectives:**  Students will learn  1. Collection, different types of inheritance, interface  2. Graphics programming, Event Handling in Java  3. Multithreading Concept  4. To design User Interface using Swing and AWT  5. Introduction to MVC architecture  6. Web programming | | | | |
| **Course Outcomes:**  On completion of the course, student will be able to–   |  | | --- | | 1. Students will learn Collection and multithreading concept.  2 Students will learn database programming using Java.  3.Create a full set of UI widgets and other components, including windows, menus, buttons, checkboxes, text fields, scrollbars and scrolling lists, using Abstract Windowing Toolkit (AWT) & Swings  4. Apply event handling on AWT and Swing components.  5. Students will get knowledge of MVC architecture.  6. Students will learn web programming using JSP and Servlet. | | | | | |
| **Course Contents:**   1. Collection 2. JDBC 3. Multithreading 4. AWT and SWING 5. JSP 6. Servlet | | | | |
| **Learning Resources:**  **Reference Books:**  1. Complete reference Java by Herbert Schildt(5th edition)  2. Java 2 programming black books, Steven Horlzner  3. Programming with Java , A primer , Fourth edition , By E. Balagurusamy  4. Core Java Volume-I-Fundamentals, Eighth Edition, Cay S. Horstmann, Gary Cornell, Prentice Hall, Sun Microsystems Press | | | | |
| **Pedagogy:**  Participative learning, discussions, algorithm, flowchart & Program writing, experiential learning through practical problem solving, assignment, PowerPoint presentation. | | | | |
| **Assessment Scheme:**  **Class Continuous Assessment (CCA): 50 Marks**   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | Assignments | Test | Presentations | Case study | MCQ | Oral | Attendance | | 20 | 10 | - | - | 20 | - | - |   **Term End Examination : 50 Marks** | | | | |

**Syllabus**

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| Module  No. | Contents | Workload in Hrs | | |
| Theory | Lab | Assess |
| 1 | **Collection:** Introduction to the Collection framework, List – ArrayList, LinkedList and Vector,Stack,Queue, Set - HashSet, TreeSet, and LinkedHashSet, Map – HashMap, LinkedHashMap, Hashtable and TreeMap, Interfaces such as Comparator, Iterator, ListIterator, Enumeration | 4 | - | - |
| 2 | **JDBC:** The design of JDBC, Basic JDBC program Concept, Drivers  Architecture of JDBC, Making the Connection, Statement, ResultSet , PreparedStatement, CollableStatement, Executing SQL commands, Executing queries | 4 | - | - |
| 3 | **Multithreading:** What are threads? Life cycle of thread, Running and starting thread using Thread class, Thread priorities, Running multiple threads, The Runnable interface, Synchronization and interthread communication | 3 | - | - |
| 4 | **AWT & SWING :**  **AWT:** What is AWT ? Components and container used in AWT  Layout managers, Event Handling: Event sources, Listeners, Mouse and Keyboard Event Handling, Adapters, Anonymous inner class.  **SWING :** The MVC Architecture and Swing, Introduction to layout management, Text Fields, Labels, Check boxes, Radio buttons, List, Combo boxes, Border, Scrollbars, Scrolling window, Menus, Reacting to menu events, Icons in item menus, checkbox and radio button, menu items, Popup menu, Dialog boxes. | 10 | - | - |
| 5 | **JSP:** Simple first JSP program, Life cycle of JSP, Implicit Objects, Scripting elements – Declarations, Expressions, Scriplets, Comments, JSP Directives – Page Directive, include directive, Mixing Scriplets and HTML, Example of forwarding contents from database to servlet, servlet to JSP and displaying it using JSP scriplet tag | 4 | - | - |
| 6 | **Servlet:** Introduction to Servlet and Hierarchy of Servlet, Life cycle of servlet, Tomcat configuration (Note: Only for Lab Demonstration), Handing get and post request (HTTP) | 5 | - | - |