**COURSE PLAN**

|  |  |
| --- | --- |
| Target | 50% (marks) |
| Level-1 | 40% (population) |
| Level-2 | 50% (population) |
| Level-3 | 60% (population) |

1. **Method of Evaluation**

|  |  |
| --- | --- |
| **UG** | **PG** |
| Quizzes/Tests, Assignments (30%) | Quizzes/Tests, Assignments, seminar (50%) |
| Mid Examination (20%) | End semester (50%) |
| End examination (50%) |  |

\*may be keep as per Program (UG/PG)

1. **Passing Criteria**

|  |  |  |
| --- | --- | --- |
| **Scale** | **PG** | **UG** |
| **Out of 10point scale** | SGPA – “6.00” in each semester  CGPA – “6.00”  Min. Individual Course Grade  –  “C”  Course Grade  Point –  “4.0” | SGPA – “5.0” in each semester  CGPA – “5.0”  Min. Individual Course Grade  –  “C”  Course Grade  Point –  “4.0” |

\*for PG, passing marks are 40/100 in a paper

\*for UG, passing marks are 35/100 in a paper

1. **Pre-requisites:**

* Basic Knowledge of Programming

1. **Course Objectives:**

* Develop Java programs that leverage the object-oriented features.
* Design & implement multithreading and data structure.
* Learn the concepts of JDBC and Servlets.

1. **Pedagogy**

* Synchronous Mode using BB Collaborate aided with power point presentations.
* Asynchronous Mode using Recorded Lectures/Voice over Power Points.
* 1 Discussion will be covered every week on working/non-working day as per faculty/student convenience. Proper record will be maintained for it.
* Regular Communication for Tests/Quizzes/Assignments as well as discussions will be ensured by the faculty through email or Blackboard announcements.

1. **Topics introduced for the first time in the program through this course:**

* **Object Oriented Concepts**
* **Exception Handling**
* **Web Applications**
* **JDBC and Interfaces**

1. **References:**

|  |  |  |  |
| --- | --- | --- | --- |
| Text Books | Web resources | Journals | Reference books |
| **T1:** The Java Programming Language 3rd Edition, Ken Arnold, James Gosling, Pearson  **T2:** Head First servlets and JSP 2nd Edition  **T3:** The Complete Reference Java 7th Edition, Herbert-Schild, TMH  **T4:** Java SE7 Programmer I & II study Guide, Kathy Sierra and Bert Bates, McGraw Hill | <https://nptel.ac.in/courses/106/105/106105191/> |  | **R1:** A premier guide to SCJP 3rd Edition, Khalid Mughal, Pearson  **R2:** Thinking in Java, 3rd Edition, Bruce Ackel, Pearson |

**Signature of HOD/Dean Signature of Faculty**

**Date: Date:**

**GUIDELINES TO STUDY THE SUBJECT**

**Instructions to Students:**

1. Go through the 'Syllabus' in the Black Board section of the web-site(https://learn.upes.ac.in) in order to find out the Reading List.
2. Get your schedule and try to pace your studies as close to the timeline as possible.
3. Get your on-line lecture notes (Content, videos) at Lecture Notes section.  These are our lecture notes. Make sure you use them during this course.
4. check your blackboard regularly
5. go through study material
6. check mails and announcements on blackboard
7. keep updated with the posts, assignments and examinations which shall be conducted on the blackboard
8. Be regular, so that you do not suffer in any way
9. C**ell Phones and other Electronic Communication Devices:** Cell phones and other electronic communication devices (such as Blackberries/Laptops) are not permitted in classes during Tests or the Mid/Final Examination. Such devices MUST be turned off in the class room.
10. **E-Mail and online learning tool:** Each student in the class should have an e-mail id and a pass word to access the LMS system regularly. Regularly, important information – Date of conducting class tests, guest lectures, via online learning tool. The best way to arrange meetings with us or ask specific questions is by email and prior appointment. All the assignments/tests/quizzes and asynchronous lectures (Recorded Lectures or Voice over ppt) will be uploaded on online learning tool BlackBoard. Various research papers/reference material will be mailed/uploaded on online learning platform time to time.
11. **Attendance:** Students are required to have minimum attendance of 75% in each subject. Students with less than said percentage shall NOT be allowed to appear in the end semester examination.

This much should be enough to get you organized and on your way to having a great semester! If you need us for anything, send your feedback through e-mail [prakashgl@ddn.upes.ac.in](mailto:prakashgl@ddn.upes.ac.in). Please use an appropriate subject line to indicate your message details.

There will no doubt be many more activities in the coming weeks. So, to keep up to date with all the latest developments, please keep visiting this website regularly.

**RELATED OUTCOMES**

1. **The expected outcomes of the Program are:**

|  |  |
| --- | --- |
| **PO1** | **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems. |
| **PO2** | **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences. |
| **PO3** | **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations. |
| **PO4** | **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions. |
| **PO5** | **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations. |
| **PO6** | **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice. |
| **PO7** | **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development. |
| **PO8** | **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice. |
| **PO9** | **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings. |
| **PO10** | **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions. |
| **PO11** | **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one’s own work, as a member and leader in a team, to manage projects and in multidisciplinary environments. |
| **PO12** | **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. |

1. **The expected outcomes of the Specific Program are: (upto3)**

|  |  |
| --- | --- |
| **PSO1** | Perform system and application programming using computer system concepts, concepts of Data Structures, algorithm development, problem solving and optimizing techniques |
| **PSO2** | Apply software development and project management methodologies using concepts of front-end and back-end development and emerging technologies and platforms. |
| **PSO3** | Ability to create & develop most efficient solutions by applying machine learning with analytical emphasis on industrial and research problems. |

1. **The expected outcomes of the Course are: (minimum 3 and maximum 6)**

|  |  |
| --- | --- |
| **CO 1** | Describe object-oriented programing concepts and architecture of Java. |
| **CO 2** | Analyze real world object-oriented concepts and incorporate into the Java programs. |
| **CO 3** | Implement Interfaces, Design Pattern and Exceptions handling |
| **CO 4** | Use Multithreading, Collections and JDBC. |
| **CO 5** | Develop server-side applications using JSP and Servlets. |

1. **Co-Relationship Matrix**

Indicate the relationships by1- Slight (low) 2- Moderate (Medium) 3-Substantial (high)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Program**  **Outcomes**  **Course Outcomes** | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** | **PSO1** | **PSO2** | **PSO3** |
| **CO 1** | 1 | 2 | 2 |  | 2 |  |  |  |  |  |  |  | 1 | 3 |  |
| **CO 2** | 1 | 2 | 2 | 2 | 2 |  |  |  |  |  |  |  | 1 | 3 |  |
| **CO 3** | 1 | 2 | 2 | 1 | 2 |  |  |  |  |  |  |  | 1 | 3 |  |
| **CO 4** | 1 | 2 | 2 |  | 2 |  |  |  |  |  |  |  | 1 | 3 |  |
| **CO 5** | 1 | 2 | 2 |  | 2 |  |  |  |  |  |  |  | 1 | 3 |  |
| **Average** | 1 | 2 | 2 | 1.5 | 2 |  |  |  |  |  |  |  | 1 | 3 |  |

1. **Course outcomes assessment plan:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **components**  **Course Outcomes** | **Assignment** | **Test/Quiz** | **Mid Semester** | **End Semester** | **Any other** |
| **CO 1** |  |  |  |  | **□** |
| **CO 2** |  |  |  |  | **□** |
| **CO3** |  |  |  |  | **□** |
| **CO 4** |  |  | **□** |  | **□** |
| **CO 5** |  |  | **□** |  | **□** |

**OVERVIEW OF COURSE DELIVERY/BROAD PLAN OF COURSE COVERAGE**

**Course Activities:**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S. No.** | **Description** | **Planned** | | | **Actual** | | | **Remarks** |
| **From** | **To** | **No. of Sess.** | **From** | **TO** | **No. of Sess.** |
| **1.** | **Introduction** | 2 Aug | 10 Aug | 05 |  |  | 05 | Assignment -1 |
| **2.** | **Inheritance, Interfaces and Packages** | 11 Aug | 1 Sep | 10 |  |  | 09 | Assignment -2 |
| **3.** | **Exception and String Handling** | 6 Sep | 21 Sep | 08 |  |  | 09 | MIDSEM |
| **4.** | **Nested Classes and Threads** | 22 Sep | 11 Oct | 08 |  |  | 08 | Assignment -3 |
| **5.** | **Collections, Design Pattern and JDBC** | 12 Oct | 2 Nov | 10 |  |  | 10 |  |
| **6** | **Advanced Java** | 8 Nov | 17 Nov | 07 |  |  | 09 | Assignment -4 |

Total No. of Instructional periods available for the course: Sessions

**Signature of HOD/Dean Signature of Faculty**

**Date: Date:**

**SESSION PLAN**

**UNIT-I**

**Introduction (5 hrs)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Session Plan** | | | | **Actual Delivery** | | | |
| **Lect.** | **Date** | **Topics to be Covered** | **CO Mapped** | **Lect.** | **Date** | **Topics Covered** | **CO Achieved** |
| 1 | 02-Aug | Feature of Java, JVM, JRE, setting Class path (Java Environment)  Classes | CO1 |  |  | Feature of Java, JVM, JRE, setting Class path (Java Environment)  Classes | CO1 |
| 2 | 03-Aug | Fields, Access Control, Creating Objects, Construction, Initialization, | CO1 |  |  | Fields, Access Control, Creating Objects, Construction, Initialization, | CO1 |
| 3 | 04-Aug | Methods, this, Overloading Methods, main Method | CO1 |  |  | Methods, this, Overloading Methods, main Method | CO1 |
| 4 | 09-Aug | Native Methods, Class Design Lexical Elements, Types and Literals, | CO1 |  |  | Native Methods, Class Design Lexical Elements, Types and Literals, | CO1 |
| 5 | 10-Aug | Variables, Array Variables, Naming | CO1 |  |  | Variables, Array Variables, Naming | CO1 |

**Signature of faculty Date**

**SESSION PLAN**

**UNIT-II**

**Inheritance, Interfaces and Packages (10 hrs)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Session Plan** | | | | **Actual Delivery** | | | |
| **Lect.** | **Date** | **Topics to be Covered** | **CO Mapped** | **Lect.** | **Date** | **Topics Covered** | **CO Achieved** |
| 6 | 11-Aug | Operators, Expressions, Member Access, Precedence, Associativity Statements & Blocks, if-else, switch, while and do-while, for, Labels, break, continue, return, goto | CO2 |  |  | Operators, Expressions, Member Access, Precedence, Associativity Statements & Blocks, if-else, switch, while and do-while, for, Labels, break, continue, return, goto | CO2 |
| 7 | 16-Aug | Extended Class, Constructors in Extended classes, Inheriting and Redefining Members | CO2 |  |  | Extended Class, Constructors in Extended classes, Inheriting and Redefining Members | CO2 |
| 8 | 17-Aug | Type Compatibility and Conversion, protected, final Methods and Classes, | CO2 |  |  | Type Compatibility and Conversion, protected, final Methods and Classes, | CO2 |
| 9 | 18-Aug | Abstract methods and classes, Object Class, | CO2 |  |  | Abstract methods and classes, Object Class, | CO2 |
| 10 | 23-Aug | Designing extended classes, Single Inheritance versus Multiple Inheritance | CO2 |  |  | Designing extended classes, Single Inheritance versus Multiple Inheritance | CO2 |
| 11 | 24-Aug | Interface, Interface Declarations, Extending Interfaces | CO2 |  |  | Interface, Interface Declarations, Extending Interfaces | CO2 |
| 12 | 25-Aug | Working with Interfaces, Marker Interfaces, When to Use Interfaces | CO2 |  |  | Working with Interfaces, Marker Interfaces, When to Use Interfaces | CO2 |
| 13 | 30-Aug | Package naming, type imports | CO2 |  |  | Package naming, type imports | CO2 |
| 14 | 31-Aug | package access, package contents, package objects and specifications | CO2 |  |  | package access, package contents, package objects and specifications | CO2 |
| 15 | 01-Sep | Practice Questions on Interfaces and Packages | CO2 |  |  | Practice Questions on Interfaces and Packages | CO2 |

**Signature of faculty Date**

**SESSION PLAN**

**UNIT-III**

**Exception and String Handling (8 hrs)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Session Plan** | | | | **Actual Delivery** | | | |
| Lect. | Date | **Topics to be Covered** | **CO Mapped** | **Lect.** | **Date** | **Topics Covered** | **CO Achieved** |
| 16 | 06-Sep | Creating exception types, throw, throws Try, catch and finally | CO3 |  |  | Creating exception types, throw, throws Try, catch and finally | CO3 |
| 17 | 07-Sep | Custom exception, when to use exception | CO3 |  |  | Custom exception, when to use exception | CO3 |
| 18 | 08-Sep | More Examples and Practices on Exceptions | CO3 |  |  | More Examples and Practices on Exceptions | CO3 |
| 19 | 13-Sep | Wrapper classes and loading classes | CO3 |  |  | Wrapper classes and loading classes | CO3 |
| 20 | 14-Sep | String operations, String comparisons, utility methods | CO3 |  |  | String operations, String comparisons, utility methods | CO3 |
| 21 | 15-Sep | Making related strings, string conversions | CO3 |  |  | Making related strings, string conversions | CO3 |
| 22 | 20-Sep | Strings and char arrays, string and byte arrays | CO3 |  |  | Strings and char arrays, string and byte arrays | CO3 |
| 23 | 21-Sep | StringBuffer, StringBuilder, More Examples and Practices on Strings | CO3 |  |  | StringBuffer, StringBuilder, More Examples and Practices on Strings | CO3 |

**Signature of faculty Date:**

**SESSION PLAN**

**UNIT-IV**

**Nested Classes and Threads (8 hrs)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Session Plan | | | | Actual Delivery | | | |
| **Lect.** | **Date** | **Topics to be Covered** | **CO Mapped** | **Lect.** | **Date** | **Topics Covered** | **CO Achieved** |
| 24 | 22-Sep | Static Nested Types, Inner Classes | CO4 |  |  | Static Nested Types, Inner Classes | CO4 |
| 25 | 27-Sep | Local Inner Classes, Anonymous Inner Classes | CO4 |  |  | Local Inner Classes, Anonymous Inner Classes | CO4 |
| 26 | 28-Sep | Inheriting Nested Types, Nesting in Interfaces, Implementation of Nested Types | CO4 |  |  | Inheriting Nested Types, Nesting in Interfaces, Implementation of Nested Types | CO4 |
| 27 | 29-Sep | Creating Threads , Using Runnable, Synchronization | CO4 |  |  | Creating Threads , Using Runnable, Synchronization | CO4 |
| 28 | 04-Oct | Wait, notifyAll, and notify, Waiting and Notification, | CO4 |  |  | Wait, notifyAll, and notify, Waiting and Notification, | CO4 |
| 29 | 05-Oct | Thread Scheduling, Deadlocks , | CO4 |  |  | Thread Scheduling, Deadlocks , | CO4 |
| 30 | 06-Oct | Ending Thread Execution, volatile | CO4 |  |  | Ending Thread Execution, volatile | CO4 |
| 31 | 11-Oct | Thread Management, Security, and ThreadGroup, Threads and Exceptions, debugging threads | CO4 |  |  | Thread Management, Security, and ThreadGroup, Threads and Exceptions, debugging threads | CO4 |

**Signature of faculty Date:**

**SESSION PLAN**

**UNIT-V**

**Collections, Design Pattern and JDBC (10 hrs)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Session Plan** | | | **Actual Delivery** | | | | |
| **Lect.** | **Date** | **Topics to be Covered** | **CO Mapped** | **Lect.** | **Date** | **Topics Covered** | **CO Achieved** |
| 32 | 12-Oct | Collections, Iteration, collection interface | CO4 |  |  | Collections, Iteration, collection interface |  |
| 33 | 13-Oct | Set and SortedSet, List | CO4 |  |  | Set and SortedSet, List | CO4 |
| 34 | 18-Oct | Map and SortedMap | CO4 |  |  | Map and SortedMap | CO4 |
| 35 | 19-Oct | Wrapped Collections and Collections Class | CO4 |  |  | Wrapped Collections and Collections Class | CO4 |
| 36 | 20-Oct | Arrays, Legacy Collection, Properties | CO4 |  |  | Arrays, Legacy Collection, Properties | CO4 |
| 37 | 25-Oct | Design Pattern: Object Composition Principles Singleton Design Pattern | CO4 |  |  | Design Pattern: Object Composition Principles Singleton Design Pattern | CO4 |
| 38 | 26-Oct | Design Pattern: Factory Design Pattern | CO4 |  |  | Design Pattern: Factory Design Pattern | CO4 |
| 39 | 27-Oct | Structure of JDBC program, Types of driver, driver manager class | CO4 |  |  | Structure of JDBC program, Types of driver, driver manager class | CO4 |
| 40 | 01-Nov | JDBC statement: prepared, callable | CO4 |  |  | JDBC statement: prepared, callable | CO4 |
| 41 | 02-Nov | JDBC: Types of result set, Inserting and updating records , Design Pattern: DAO Design Pattern | CO4 |  |  | JDBC: Types of result set, Inserting and updating records , Design Pattern: DAO Design Pattern | CO4 |

**Signature of faculty Date:**

**SESSION PLAN**

**UNIT-VI**

**Advanced Java (7 hrs)**

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| --- | --- | --- | --- | --- | --- | --- | --- |
| **Session Plan** | | | | **Actual Delivery** | | | |
| Lect. | Date | Topics to be Covered | **CO Mapped** | **Lect.** | **Date** | **Topics Covered** | **CO Achieved** |
| 42 | 08-Nov | Simple Servlet, Servlet life cycle, servlet program, Generic servlet, HTTP servlet | CO5 |  |  | Simple Servlet, Servlet life cycle, servlet program, Generic servlet, HTTP servlet | CO4 |
| 43 | 09-Nov | Servlet config, servlet context, Get and Post methods Deployment Descriptor; Session Management: URL Rewriting, Hidden Fields | CO5 |  |  | Servlet config, servlet context, Get and Post methods Deployment Descriptor; Session Management: URL Rewriting, Hidden Fields | CO5 |
| 44 | 15-Nov | Cookies, Session Objects,Servlet Filter, Servlet Listeners | CO5 |  |  | Cookies, Session Objects,Servlet Filter, Servlet Listeners | CO5 |
| 45 | 16-Nov | Problem with servlets, JSP: Basic JSP architecture Lifecycle of JSP, JSP elements | CO5 |  |  | Problem with servlets, JSP: Basic JSP architecture Lifecycle of JSP, JSP elements | CO5 |
| 46 | 17-Nov | JSP declaration, expression, scriplets, JSP directives: page directive. include directive | CO5 |  |  | JSP declaration, expression, scriplets, JSP directives: page directive. include directive | CO5 |

**Signature of faculty: Date:**