AC –
Item No. –

# As Per NEP 2020

# Tolani College of Commerce (Autonomous)

Knowledge is Supreme

**Title of the Course: Core Java**

**Programme: B.Sc.(Information Technology)**

**Semester -IV**

**Syllabus for 4 credits**

**From the academic year-2025-2026**

| Sr. No. | Heading | Particulars |
|---|---|---|
| 1 | **Description of the course :** | Core Java refers to the standard edition of the Java programming language, which includes the fundamental components and libraries necessary for general-purpose application development. It serves as the foundation for other editions of Java, such as Java EE (Enterprise Edition) and Java ME (Micro Edition). |
| 2 | **Vertical :** | Major |
| 3 | **Type :** | Theory and Practical |
| 4 | **Credit**: | 4 credits |
| 5 | **Hours Allotted :** | 60 Hours |
| 6 | **Marks Allotted**: | 100 Marks<br>Continuous Evaluation =40<br>Semester End =60 |
| 7 | **Course Objectives**:<br>1 To understand the basic concepts and fundamentals of platform independent object-oriented language.<br>2. To demonstrate skills in writing programs using exception handling techniques and multithreading.<br>3. To understand streams and efficient user interface design techniques.<br>4. AWT structure and demonstration. | |
| 8 | **Course Outcomes**:<br>1. Use the syntax and semantics of java programming language.<br>2. Develop reusable programs using the concepts of inheritance, polymorphism, interfaces and packages.<br>3. Apply the concepts of Multithreading and Exception handling to develop efficient and error free codes.<br>4. Design event driven GUI and web related applications which mimic the real word scenarios. | |

| | |
|---|---|
| **9** | **Modules**:- |
| | **Module 1: Introduction, Control flow statements, Iterations (15 hours)** |
| | • History, architecture and its components, Java Class File, Java Runtime Environment, The Java Virtual Machine, JVM Components.<br>• Data types: primitive data types, Object Reference Types, Strings, Auto boxing, operators and properties of operators, Arithmetic operators, assignment operators, increment and decrement operator, relational operator, logical operator, bitwise operator, conditional Operator<br>• Control flow statements: The If…Else If…Else Statement, The Switch…Case Statement<br>• Iterations**:** The While Loop, The Do … While Loop, The For Loop, The For each Loop, Labeled Statements, The Break And Continue Statements, The Return Statement |
| | **Module 2: Classes (15 hours)** |
| | • Types of Classes, Scope Rules, Access Modifier, Instantiating Objects From A Class, Initializing The Class Object And Its Attributes, Class Methods, Accessing A Method, Method Returning A Value, Method's Arguments, Method Overloading,<br>• Constructors, this Instance, super Instance, Characteristics of Members of a Class, constants, this instance, static fields and methods of a class, garbage collection.<br>• Inheritance, super keyword, Abstract Classes and Interfaces.<br>• Abstract Methods, Interfaces, Abstract Class, Packages. |
| | **Module 3: Arrays and collection, Multithreading, Exceptions, Byte stream (15 hours)** |
| | • Two Dimensional Arrays, Multi-Dimensional Arrays, Vectors, array list, stack, queue, priority queue, link list.<br>• Thread control methods, thread life cycle, the main thread, creating a thread, extending the thread class.<br>• Catching Java Exceptions, Catching Run-Time Exceptions, Handling Multiple Exceptions, The finally Clause, The throws Clause.<br>• Reading console input, writing console output, reading file, writing file, writing binary data, reading binary data, getting started with character streams, writing file, reading file. |

| | | |
|---|---|---|
| | **Module 4: Abstract Window Toolkit:** **(15 hours)** | |
| | • Window Fundamentals, Component, Container.<br>• Panel, Window, Frame, Canvas. Components – Labels, Buttons, Check Boxes, Radio Buttons, Choice Menus, Text Fields, Text, Scrolling List, Scrollbars, Panels, Frames,<br>• Swing.<br>• Layouts, Flow Layout, Grid Layout, Border Layout, Card Layout. | |
| **10** | **References:**<br>1. **Author:** Vaishali Shah, **Title:** Core Java 8 for Beginners, **Publisher:**SPD 1st,**Year:** 2015<br>2. **Author:** Herbert Scheldt **,Title:** Java: The Complete Reference **Publisher:** McGraw Hill **Edition:**9th,**Year:**2014<br>3. **Author:** Joel Murach ,**Title:** Java with Net Beans, **Publisher:** Michael Urban, SPD **Edition:**1st,**Year:**2016 | |
| **13** | **Internal Continuous Assessment: 40%** | **Semester End Examination : 60%** |
| **14** | **Continuous Evaluation through:** | Practical |

**Question Paper Pattern:**

**Scheme of Evaluation Pattern**

**Table 1A: Scheme of Continuous Evaluation (CE/Practical)**

**Scheme of Evaluation Pattern**

| Sub-components | Maximum Marks | Conditions for passing |
|---|---|---|
| Practical exam | 30 | a) A learner must be present for each of the sub-components.<br>b) Combined passing criteria |
| Journal and Viva | 10 | |
| Total | 40 | |

**Table 1B: Scheme of Semester End Examination (SEE) Evaluation**
**Question Paper Pattern for Semester End Examination (SEE)**

**Maximum Marks: 60** **Duration: 2 Hrs.**

Note: All questions are compulsory. Each question has an internal choice.

| Question Number | | Nature of Questions | Maximum Marks |
|---|---|---|---|
| 1) | | **Attempt any 3** | |
| | a) | | 15 |
| | b) | | |
| | c) | | |
| | d) | | |
| | e) | | |
| 2) | | **Attempt any 3** | |
| | a) | | 15 |
| | b) | | |
| | c) | | |
| | d) | | |
| | e) | | |
| 3) | | **Attempt any 3** | |
| | k) | | |
| | l) | | |
| | m) | | |
| | n) | | |
| | o) | | |
| 4) | | **Attempt any 3** | |
| | a) | | 15 |
| | b) | | |
| | c) | | |
| | d) | | |
| | e) | | |

AC –
Item No. –

# As per NEP 2020

# Tolani College of Commerce (Autonomous)


**Title of the Course: Software Engineering**

**Programme: B.Sc. (Information Technology)**

**Semester-IV**

**Syllabus for 4 credits**

**From the academic year-2025-2026**