SYMBIOSIS INTERNATIONAL (DEEMED UNIVERSITY)
(Established under section 3 of the UGC Act 1956)
Re - accredited by NAAC with 'A' Grade
Founder: Prof. Dr. S. B. Mujumdar, M.Sc.,Ph.D. (Awarded Padma Bhushan and Padma Shri by President of India)

Sub Committee - Specialization for Curriculum Development
Specialization: Computer Science and Information Technology

Faculty : Engineering

Sub-Committee (Specialization) : AIML

Course Name : Programming with Java

Catalog Code : 0701260402

Course Credit : 3

Course Level : 2

Learning Objectives:

Students will be able to

1. Understand the core concepts of object-oriented programming in Java, including defining classes, objects, and invoking methods.
2. Demonstrate the principles of inheritance, packages, and interfaces.
3. Illustrate the concept of exception handling in Java with examples.
4. Understand the concept of java database connectivity for developing Java applications.
5. Illustrate the concept of Multithreading in Java.

Pre-requisites

Understanding of Programming Paradigms and familiarity with concepts of object-oriented programming .

Course Outline

Sr. No.	Topic	Hours
1	**Introduction to Java:** Need of object oriented approach, comparison of C++ and java, object, classes, abstraction, encapsulation, polymorphism and inheritance ,writing java classes,JDK environment and tools, JVM , JRE . Features of java: . Constructor(parameterized and default), static variable, instance variable, static methods, instance methods, language fundamentals: structure of memory, parameterpassing in java, wrapper classes, inner class.	10
2	**Inheritance, Abstract class, Interfaces and Packages:** Inheritance, types: single, multi-level, hierarchical inheritance, use of this andsuper keyword, super constructor, final variables, final methods and classes, Abstract keyword, abstract methods and classes, method overloading, methodoverriding. Dynamic Method Dispatch, Interfaces, implementing and extendingand accessing interface variables. Java packages, importing packages, accesscontrol and modifiers. Arrays, Arraylist, vector, garbage collector, javamiscellaneous: String, String Buffer class, String Tokenizer	11
3	**Exception Handling:** Exception handling, need for exception handling, exception types, usingtry-catch, multiple catch, nested try, finally, throw, throws, user definedexceptions	8
4	**JDBC** Introduction to JDBC API, JDBC: identify the need of JDBC types of driver, types ofdrivers, an overview of Relational Database, Steps to connect a Java Applicationto Database, JDBC Driver and DriverManager Class, JDBC Statement Interface, JDBC ResultSet Interface, Java Database Connectivity with Oracle / MySQL.	8
5	**Multithreading in Java:** Thread Definition, multiprocessing, multithreading, thread, process, the life cycleof thread, methods of threads class, thread synchronization	8

Pedagogy

1. Interactive Teaching Learning and Hands-On
2. Project based Learning
3. Capstone Project
4. Case studies

Books Recommended

1. "Java 2: The Complete Reference", 3rd Edition, Patrick Naughton, Herbert Schildt Osborne Publishing, (1999)
2. "Programming With Java: A Primer", 3rd Edition, E. Balagurusamy, Tata McGraw - Hill Education (2008)
3. "Java How to Program", 9th Edition, Deitel and Deitel, Prentice Hall

4. Austin and Pawlan, Advanced Programming for JAVA 2 Platform, Pearson Education (2004)

Suggested Evaluation Methods: --

Suggested Assessment/ Evaluation Methods (100 Marks, Fully Internal)

a) Quizzes / Assignment/ Descriptive Test-45 Marks
b) Case Study /Mini Project -20 Marks
c) Presentation / Viva-voce-10 Marks

Course Outcomes:

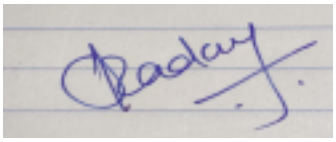
Students will be able to:

1. Design and code programs in the Java programming language that make strong use of the object-oriented programming paradigm
2. Develop reusable programs using the concepts of inheritance, polymorphism, interfaces, and packages.
3. Develop Java programs to implement error handling techniques using exception handling
4. Develop Java programs using the concept of JDBC.
5. Develop multithreading concepts in Java

Benchmarked against similar courses in other national/ international universities /organizations:

Sr. No.	Name of the Course	Name of University where it is offered
1.	Advanced Java	University of Pune
2.	Programming Method	

Name of Members	Prof. Kalyani Kadam	Pooja Kamat	Dr. Sonali Tidke
Designation	Assistant Professor (CS, IT, and AIML)	Assistant Professor (CS	Assistant Professor (CS and IT)

		and IT)	
Org. / Inst.	SIT		SIT
Signature			

Name and details of Industry Collaborator	Vinod Vasantrao Satpute Specialist Analyst, CDC, NetCracker Technologies Private Limited

Name of Experts	Dr. Shruti Patil
Designat io n	Associate Professor and HOD(AIML)
Org. / Inst.	SIT
Signature	

Signature of Dean:

Course Catalog-FOE-2021-2025