SECTION II: COURSE OUTLINES

Advanced Java Programming

Learning outcomes

At the end of the course the participant will
✓ Develop Swing-based GUI
✓ Develop client/server applications and TCP/IP socket programming
✓ Update and retrieve the data from the databases using SQL
✓ Develop distributed applications using RMI
✓ Develop component-based Java software using JavaBeans
✓ Develop server side programs in the form of servlets

Pre-requisites

Knowledge of basic Java language

Course Contents

- **Swing Programming**
  - Understand difference between Swing and AWT programming
  - Define Swing components
  - List Swing Packages
  - List the sub-classes of the JComponent class
  - Explain how swing handles events
  - Use JFC to write swing applets
  - Understand the concept of “Look and Feel”

- **Java Database Connectivity**
  - Define JDBC API
  - Describe the various JDBC drivers
  - Identify JDBC products
  - Outline JDBC design considerations
  - Describe the Two-Tier Client Server Model
  - Use JDBC to access a database
  - Set up a connection to the database
  - Create and execute SQL Statements
  - Describe the ResultSet object
  - Describe the ResultSetMetaData interface
  - Define and create stored procedures
  - Understand the importance of database enquiry
Network Programming
- Understand how the internet works
- Explain Client/Server computing
- Describe the classes of the java.net package
- Describe Java’s Web-related classes

Input/Output Stream
- Java I/O Classes and Interfaces
- File
  - Directories
  - Using Filename Filter
  - The listFiles() Alternative
  - Creating Directories
- The Stream Classes
- The Byte Streams
- The Character Streams
- Using Stream I/O
- Serialization

Remote Method Invocation
- Describe distributed Applications
- Build distributed Applications
- Define RMI
- Outline the Java Distributed Model
- List the javae.rmi packages
- Explain the three-tiered layering of Java RMI
- Implement RMI on a Remote and Local Host
- Describe Remote Objects

Inner classes, Sockets, Web connectivity, Security

Java Beans
- Define JavaBeans
- Describe the Software Component Model
- Understand BDK(Bean Development Kit)
- List the tools for bean development
- Create your own bean
- Describe CustomBean properties and events
- Understand Introspection Reports
- Implement various types of properties
- Describe event listeners
- List the benefits of using JavaBeans

Servlets
- Define a Servlet
- Compile Servlets
- List the advantages of using servlets
- Explain the life cycle of a servlet
- Describe an HTTP Servlet
- Use a servlet to retrieve information
- Define Session Tracking
- Describe InterServlet communication
- Use a servlet to access a database