

# Enterprise Java Using Servlets, JSPs, EJBs and WSAD

## Course No.

3443

## Description

This course prepares students for creating Java enterprise applications. After learning the architectural foundations, students will learn how to write and deploy Servlets, and Java Server Pages using IBM WebSphere® and WebSphere Studio Application Developer (WSAD). Best practices and implementation patterns are stressed in lecture and extensive hands-on exercises.

## Prerequisites

Students should be proficient with Java, and be familiar with compiling and testing programs with WSAD.

## Objectives

- Learn the Java servlet architecture
- Understand why to write servlets
- Understand how to write servlets
- Use JDBC with servlets
- Manage session state with servlets
- Use cookies in servlets
- Implement Java Server Pages (JSPs)
- Use built-in JSP server objects
- Use cookies and sessions in JSPs
- Create custom JSP tags
- Use Tag Descriptor Libraries
- Servlet and JSP design patterns
- Implement and deploy these Java enterprise technologies with WebSphere® and WSAD
- Learn about Using a Bean

## Major Topics

- Architectural Overview
- Servlet Basics
- Servicing Requests
- JDBC with Servlets
- Session State
- Using Cookies
- Java Server Pages (JSPs)
- Custom JSP Tags
- Tag Descriptor Libraries
- Servlet/JSP communication
- Session Beans
- Using EJBs
- Transaction Management

## Duration

5 days



## Course Contents

### 1. Architectural Overview

- Java enterprise development
- Model/View/Controller
- How it maps to the frameworks
  - WebSphere® application framework overview
  - Web Server
  - App Server
  - The Servlet Engine
  - The JSP Engine
  - EJB Server
  - Databases
  - Client platforms
- Current standards

### 2. Servlet Basics

- Servlet overview
- The Servlet API
- HTTP Basics
  - Requests
  - Responses
  - Headers
  - Get
  - Post
- Servlet Invocation
- Sending and receiving information
  - The HttpServletRequest object
  - The HttpServletResponse object
- Servlet Lifecycle
- Threading Issues
- Deploying Servlets
- Invoking a Servlet
- HttpServlet class structure and methods
- Servlet loading and reloading in WebSphere

### 3. Servicing Requests 1

- Initialization
- HttpServletRequest parameters
- Getting parameter values
- Getting parameter names
- Getting/setting status codes

### 4. Servicing Requests 2: Additional Considerations

- Objectives
- Request Headers

- HttpServletRequest Methods
- Request Header Details
- Using Request Headers
- Response Headers
- HttpServletResponse Methods
- Request Header Details
- Using Request Headers
- Compressing Pages
- Compression Example
- Returning Images
- Returning GIFs Example
- Persistent Connections
- Keep-Alive Example

### 5. Using JDBC with Servlets

- Overview of JDBC Architecture
- Connecting to the database
- Executing SQL statements
- Using ResultSets
- Using Prepared Statements
- Managing connections
  - Connection Pooling
- Using Transactions in servlets

### 6. Session Tracking and Cookies

- Objectives
- Session Tracking Overview
- User Authorization
- Hidden Form Fields
- Using Hidden Form Fields
- URL Rewriting
- Cookies
- Sending Cookies
- Retrieving Cookies
- Cookie Information
- Cookie Example
- Session Tracking API
- Using HttpSession
  - Example
- Using HttpSession
  - Example
- Session Life Cycle
- Session Binding
- Encoding Session Ids



## 7. Servlet Communication

- Servlet chaining
- Page caching techniques
- Communicating with Applets
- Servlet Chaining
- Servlet Filtering
- Redirection
- Request Dispatching
  - Forward
  - Include

## 8. Java Server Pages (JSPs)

- JSP Overview
- Relationship to Servlets
- JSP Execution
- JSP Elements
- JSP Directives
- Scriptlets
- Implicit Objects
- Declarations
- Expressions
- Comments
- Action Include
- Request Forwarding

## 9. Using JavaBeans with JSPs

- JavaBeans overview
- Architectural overview
- Passing JavaBeans
- The Bean Tag
- Bean Tag attributes
  - Name
  - Scope
  - Class and Type
- Getting/setting properties

## 10. JSP Tag Descriptor Libraries

- Custom tags overview
- Tag handler classes
- Tag descriptor libraries
- JSP taglib directive
- Basic tag definition
- Tags and attributes
- The Tag Body
- Nested Tags

## 11. EJB Fundamentals

- Objectives
- Fundamental Concepts 3
- EJB Container
- J2EE Container Architecture
- J2EE API Summary
- J2EE Summary
- Enterprise Beans
- Distributed Objects
- Explicit Middleware
- Implicit Middleware
- The EJB Bean
- The EJB Object
- EJB Object Services
- Remote Interface
- EJBObject Interface Methods
- RMI/IIOP
- The Home Object
- Home Interface Methods
- The Home Interface
- Deployment Descriptors
- EJB Jar
- Development Roles

## 12. Developing Session Beans

- Objectives
- Session Beans
- Stateless Session Beans
- Session Beans Interface
- Developing a Session Bean
- Stateless Home Interface
- Stateless Remote Interface
- Stateless Bean
- EJB Exceptions
- Deployment Descriptor
- Client Program
- Client Session View
- Stateless Session Bean life Cycle
- Stateless Sequence Diagram
- Stateful Session Beans
- Conversational State
- Stateful Home
- Stateful Remote Interface
- Stateful Bean



- Client Program
- Stateful Session Bean Life Cycle
- Stateful Sequence Diagram
- Stateful or Stateless?

### 13. Using EJBs

- Objectives
- Using Beans
- JNDI
- Initial Context
- Look-up
- EJB References
- Local Context
- RMI – IIOP Casting
- When to narrow()
- Remote Method Calls
- This
- Reentrance
- Handles

### 14. Transaction Management

- Transactions
- EJB Transactions
- Transaction Attributes
- Transactional Attributes
- Transactional Propagation
- Specifying Attributes
- Exceptions
- Explicit Rollback
- Declarative Example
- Transaction Isolation
- Controlling Isolation
- Specifying Isolation Control
- Programmatic Transactions
- Obtaining UserTransaction
- User Transaction Restrictions
- Programmatic Example

