

Course Title: Enterprise Java Programming

Credit: 3

Course No: CSIT.423.1

Number of period per week: 3+3

Nature of the Course: Theory + Lab

Total hours: 45+45

Year: Fourth, Semester: Eighth

Level: B. Sc. CSIT

1. Course Introduction

This course is designed to give students a solid knowledge in the architecture and concepts of Java EE Programming, Java web & business application development. To understand the examples, students need a good knowledge of the Java programming language, SQL, and relational database concepts.

2. Objectives

This course will allow the students to understand various Java EE concepts including:

- Learning Java EE Architecture
- Java web application development
- Learning Web Core Technologies: Servlets and JSP
- Business Component Development
- Exposure to lots and lots of working examples/applications

3. Specific Objectives and Contents

Specific Objectives	Contents
<ul style="list-style-type: none">• Understand Java EE multi-tiered architecture• Discuss concept of J2EE containers• Discuss provides of different applications and tools used in J2EE	Unit I Java EE Overview (5 hr) 1.1 Distributed Multi-tiered Applications: J2EE Components, J2EE Clients, Web Components, Business Components, Enterprise Information System Tier 1.2 J2EE Containers: Container Services, Container Types, Packaging 1.3 Development Roles: J2EE Product Provider, Tool Provider, Application Components Provider, Application Assembler, Application Deployer and Administrator 1.4 Reference Implementation Software: Database Access, J2EE APIs, Simplified System Integration, Tools
<ul style="list-style-type: none">• Demonstrate Setting of J2EE environment• Discuss and Exemplify creation, compiling, and packaging of EJB• Demonstrate creation of J2EE	Unit II: J2EE Environment (8 hr) 2.1 Setting Up Environment: Example Code, Getting Build Tool, Checking Environment Variables, Starting J2EE Server, Starting the Deploy Tool, Creating J2EE Applications 2.2 Creating Enterprise Bean: Coding the Enterprise Bean, Compiling the Source File, Packaging the Enterprise

<p>application clients</p> <ul style="list-style-type: none"> • Exemplify creation of Web client. • Discuss JNDI and deployment of J2EE Applications • Demonstrate modification of J2EE Applications 	<p>Bean</p> <p>2.3 Creating the J2EE Application Client: Coding the J2EE Application Client, Compiling the Application Client, Packaging the J2EE Application Client, Specifying the Application Clients Enterprise Bean Reference</p> <p>2.4 Creating the Web Client: Coding the Web Client, Compiling the Web Client, Packaging the Web Client, Specifying the Web Clients Enterprise Bean Reference</p> <p>2.5 Specifying the JNDI Names, Deploying the J2EE Application, Running the J2EE Application Client, Running the Web Client</p> <p>2.6 Modifying the J2EE Application: Modifying the Class File, Adding a File, Modifying the Web Client, Modifying a Deployment Setting</p>
<ul style="list-style-type: none"> • Understand basic concept and importance of EJB • Discuss different types of EJBs • Demonstrate accessing from clients • Exemplify different types of Beans 	<p>Unit III: Enterprise Java Beans (8 hr)</p> <p>3.1. Enterprise Beans: Introduction, Benefits of EJB, when to use EJB</p> <p>3.2. Types of EJB: Session Bean, Entity Bean, Message-Driven Bean</p> <p>3.3. Defining Client Access: Local Bean, Remote Bean, Performance and Access, Method Parameters and Access,</p> <p>3.4. Content of EJB, Naming Conventions of EJB, Life Cycles of EJBs</p> <p>3.5. Session Bean Examples, Bean Managed Persistence Examples, Container Managed Persistence Examples, Message driven Bean Examples</p> <p>3.6.</p>
<ul style="list-style-type: none"> • Discuss terminologies used in EJB query language • Demonstrate full syntax of EJB QL • Understand life cycle, configuration, deployment, execution, and modification of web client. 	<p>Unit IV: EJB Query Language and Web Clients (6 hr)</p> <p>4.1. Terminologies, Simplified Syntax, Example Queries (Finder Queries, Select Queries)</p> <p>4.2. Full Syntax: BNF Symbols, BNF Grammar of EJB QL, Select Clause, From Clause, Where Clause, Path Expression, EJB QL Restrictions</p> <p>4.3. Web Clients and Components: Web Client Life Cycle, Web Application Archives, Configuring, Deploying, Running, Updating, and Internationalizing Web Clients</p>
<ul style="list-style-type: none"> • Discuss Servlet concept and life cycle • Demonstrate servlet initialization, request and response • Handle cookies and sessions through servlets 	<p>Unit V: Java Servlet Technology (8 Hrs)</p> <p>5.1. Introduction: Definition, Example, Servlet Life Cycle, Sharing Information</p> <p>5.2. Initializing Servlets, Writing Service methods, Filtering Request and Response, Invoking other web Resources, Accessing web Context, Maintaining Client State, Finalizing the Servlet</p> <p>5.3. Handling HTTP Request and Response (GET / POST Request), Using Cookies, Session Tracking, Database</p>

	Access using Servlet.
<ul style="list-style-type: none"> • Understand JSP page and its life cycle • Demonstrate form creation and database processing using JSP • Demonstrate inclusion of applets in JSP pages • Exemplify creation, and retrieval of Bean components and their properties in JSP. • Demonstrate different concepts through examples 	Unit VI: JSP Technology (8 Hrs) 6.1. Definition and Example of JSP Page, Life Cycle of JSP Page, Initializing and Finalizing JSP Page 6.2. Creating and Processing Forms, Database Access using JSP 6.3. Creating Static and Dynamic Content, Including Content in JSP Page, Transferring Control to another web Component, Including an Applet, and Extending JSP Language. 6.4. Java Beans Component in JSP Pages: Why Bean Component, Creating, Setting, and Retrieving Bean Components Properties 6.5. Custom Tags, JSP Example Pages, Using Tags, Defining Tags, Examples
<ul style="list-style-type: none"> • Discuss concepts of transactions and its types • Discuss J2EE security techniques and tools 	Unit VII: Transaction and Security (4 Hrs) 6.6. Transactions: Definition Bean managed Transactions, Container Managed Transactions 6.7. Security: Overview, Roles, Web Tier, EJB-Tier, Client-Tier, EIS-Tier Security 6.8. Resource Connections, J2EE Connector Architecture, J2EE SDK Tools

Evaluation System

Undergraduate Programs							
External Evaluation	Marks	Internal Evaluation	Weight age	Marks	Practical	Weight age	Mark
End semester examination	60	Assignments	20%	20	Practical Report copy	25%	20
(Details are given in the separate table at the end)		Quizzes	10%		Viva	25%	
		Attendance	20%		Practical Exam	50%	
		Internal Exams	50%				
Total External	60	Total Internal	100%	20		100%	20
Full Marks 60+20+20 = 100							

External evaluation

1. End semester examination:

It is a written examination at the end of the semester. The questions will be asked covering all the units of the course. The question model, full marks, time and others will be as per the following grid.

2. External Practical Evaluation:

After completing the end semester theoretical examination, practical examination will be held. External examiner will conduct the practical examination according to the above mentioned evaluation. There will be an internal examiner to assist the external examiner. Three hours time will be given for the practical examination. In this examination Students must demonstrate the knowledge of the subject matter.

Full Marks: 100, Pass Marks: 45, Time: 3 Hrs

Nature of question	Total questions to be asked	Total questions to be answered	Total marks	Weightage
Group A: multiple choice*	20	20	20×1 = 20	60%
Group B: Short answer type questions	7	6	6×8 = 48	60%
Group C: Long answer type questions	3	2	2×16 =32	60%
			100	100%

Each student must secure at least 50% marks in internal evaluation in order to appear in the end semester examination. Failed student will not be eligible to appear in the end semester examinations.

Internal evaluation

Assignment: Each student must submit the assignment individually. The stipulated time for submission of the assignment will be seriously taken.

Quizzes: Unannounced and announced quizzes/tests will be taken by the respective subject teachers. Such quizzes/tests will be conducted twice per semester. The students will be evaluated accordingly.

Attendance in class: Students should regularly attend and participate in class discussion. Eighty percent class attendance is mandatory for the students to enable them to appear in the end semester examination. Below 80% attendance in the class will signify NOT QUALIFIED (NQ) to attend the end semester examination.

Presentation: Students will be divided into groups and each group will be provided with a topic for presentation. It will be evaluated individually as well as group-wise. Individual students have to make presentations on the given topics.

Mid-term examination: It is a written examination and the questions will be asked covering all the topics in the session of the course.

Discussion and participation: Students will be evaluated on the basis of their active participation in the classroom discussions.

Instructional Techniques: All topics are discussed with emphasis on real-world application. List of instructional techniques is as follows:

- Lecture and Discussion
- Group work and Individual work
- Assignments
- Presentation by Students
- Quizzes
- Guest Lecture

Students are advised to attend all the classes and complete all the assignments within the specified time period. If a student does not attend the class (es), it is his/her sole responsibility to cover the topic(s) taught during that period. If a student fails to attend a formal exam/quiz/test, there won't be any provision for re-exam. Unless and until the student clears one semester he/she will not be allowed to study in the following semesters.

Laboratory Work

Student should write programs and prepare lab sheet for all of the units in the syllabus. Students should be able to Server Side programs by using various concepts discussed in class. The lab work should be practiced for minimum of 3 lab hours per week.

Prescribed Text

- Java Server Programming Java EE6 (J2EE 1.6) Black Book, Kogent Learning Solutions Inc, Dreamtech Press, 2010
- J2EE: The Complete Reference, Keogh, Tata-McGraw Hill Education, 2002
- Professional Java Server Programming J2EE, Subrhamanyam Allamaraju, Cedric Beust, Marc Wilcox
- Professional J2EE EAI, Matjaz Juric, Ranesh Nagappan, Rick Leander, S Jeelani Basha
- Web Resource:
<http://www.muskingum.edu/~reichard/J2EE/j2eetutorial/doc/J2eeTutorialTOC.html>