City University
Department of Computer Science and Engineering
Faculty of Science and Engineering

Course Outline

Course Code and Title, CSE – 410: Advanced Enterprise Java Laboratory
Credit Hours: 3
Prerequisites:

Program: B. Sc. in Computer Science & Engineering (CSE),
Semester: Summer 2019

Total Weeks: 13	**Hours/Week:** 3	**Total Hours:** 39[+]

Instructor: Supta Richard Philip
Designation: Senior Lecturer
Office: Room 403   **Phone:** 01914818982
Email: supta.philip@gmail.com
Office Hrs: By appointment

Course Details
Rationale:
This course will help students to get knowledge and skill on Java Enterprise (J2EE) Edition which lead them to work on advance Java programming in industries. This intensive, hands-on course explores Java Standard Edition (Java SE) and J2EE language features and packages. Students will work with JDBC and hibernate technologies, JSP and Servlet, EJB, Java Persistence API (JPA 2.2) and persistent as well as XML or JSON documents using the JAXP API and Java API for Restful Web Services (JAX-RS 2.1). Student will also learn OOP concept, Design pattern, and SOLID principles to build loose coupling software design. This course will also cover java.net, java.rmi, JNDI for Client/server applications and more advanced topic such as Spring MVC framework and Spring Boot.

Intended learning outcomes (ILOs) of the Course:

Knowledge	**LO1:** Understand the theoretical underpinnings, specifications and implementations of Java Enterprise Edition (JEE).
	LO2: Learn to create loosely coupled application using dependency injection API (CDI) using various Java EE APIs.
	LO3: Learn to write powerful web application and services using JSP, Servlet, EJB, Java Persistence API (JPA 2.2), Java API Restful Web Services (JAX-RS), JDBC, hibernate, etc.
Skills	Will develop skills on understanding the problems
	Will gain skills on analysis the problem and selecting the solutions for the problem.
	Will help in achieving communication, demonstrate and presentation skill.
Attitude	Will develop attitude to group dynamics and team work.
	Will create attitude to tackle challenges related to computer and basic software.
	Will create positive attitude to listen ideas of classmates.

Mapping of Course ILO and PLO:

Learning Outcome (LO) of the Course	Program Learning Outcome (PLO)											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	
LO1	MJ	MJ	MJ	MJ	MJ			MN		MJ	MN	
LO2	MJ	MJ	MJ	MJ						MJ	MN	
LO3	MJ	MJ	MJ	MN	MN					MJ	MN	
LO4	MJ	MJ	MN		MN					MJ	MN	

Course Contents:

SL. NO	ILO	Topic	Teaching Strategy	Assessment Strategy	No of Sessions
1	1	Java Language, Data Type, conditional statement, iteration, function.	Lecture, Exercise	Q/A, Quiz	1
2	1,2	Object oriented programming: encapsulation, abstraction, inheritance and polymorphism, interface and abstract class.	Lecture, Exercise	Q/A, Quiz	1
3	1,2	Overview of the java.io Package, Reading and Writing Objects, Serializing an Object, Input/Output Exception, Managing Input/Output Files, JAXB API, JSON API.	Lecture, Exercise	Q/A, Quiz	2
4	1,4	Create a thread, Thread Model, Blocking Threads, Multithreaded Programming, Thread Priorities, Synchronization.	Lecture, Exercise	Q/A, Quiz	1
5	1,2	Package Manipulation, The javadoc Utility Documenting Classes and Interfaces, Running the javadoc Utility, jar Files, The Manifest File, Bundling and Using Jar-Packaged Resources	Lecture, Exercise	Q/A, Quiz	1
6	1,4	Java Collection, Collection Interface, The Collections Class,Java Collections and Generics	Lecture, Exercise	Q/A, Quiz	1
7	1,2	Graphical User Interface (GUI) Programming, Components and Containers, Using Containers, Layout Managers, AWT Components, Adding a Menu to Window, Extending GUI Features Using Swing Components and JavaFx	Lecture, Exercise	Q/A, Quiz	2
8	1,4	Overview of SQL Language, DBMS and RDBMS, Using JDBC.	Lecture, Exercise	Q/A, Quiz	2
9	1,2	Design patterns: Creational(Factory, Abstract Factory, Builder, Singleton patterns), Structural design patterns(Adapter, Bridge, Composite, Decorator), Behavioral patterns(Chain of responsibility, Command, Interpreter, Iterator)	Lecture, Exercise	Q/A, Test,	1
		Midterm Examination			
10	1,2	Networking fundamentals, The Client/Server model, Sockets, Implementing the Client/Server Side Socket, Sample client/server interaction programs, writing servers	Lecture, Exercise	Q/A, Test, Assignment	1
11	1,2	Applet, Introduction RMI Architecture, Implementing the Remote Interface, Compiling and Executing the Server and the Client.	Lecture, Exercise	Q/A, Test	1
12	1,2	Java Server Pages, JSP Architecture and Life Cycle, JSP Tags and Expressions, Tag Libraries, JSP Expression Language (EL), JSP Capabilities.	Lecture, Exercise	Q/A, Test, Assignment	1
13	1,2	Introduction to servlet and life cycle, Developing and Deploying Servlets, Servlet Chaining, Session Tracking & Management, Dealing with cookies, Transferring Request, Accessing Web Context, Passing INIT and CONTEXT Parameter, User Authentication	Lecture, Exercise	Q/A, Test, Assignment	2
14	2,3,4	Java Enterprise Bean (EJB), EJB components, Java Persistence API (JPA 2.2), Hibernate. EJB technology application, explore message-driven EJB components, Java API for Restful Web Services (JAX-RS 2.1).	Lecture, Exercise	Q/A, Test, Assignment	3
16	2,3	Dependency injection, Spring MVC and Spring	Lecture,	Q/A, Quiz	4

		Boot.		Exercise		

Teaching Learning Methods:

Analyze and solve knowledge-based problems for practical situation
Group discussion
Lecture slides, presentations, audio and video
Analytical and critical thinking approach to understand real life system and models

Assessment Schedule:

Assessment 1	Quizzes	Week 4, Week 10
Assessment 2	Assignments	Week 5, Week 11
Assessment 3	Presentation	Week 5, Week 11
Assessment 4	Mid-Term Exam	Week 6
Assessment 5	Final Exam	Week 12

Weights of Assessments:

Assessments	%
Mid-Term Exam	30
Final Exam	40
Quizzes	10
Assignments	10
Presentation	10
Total	**100**

Grading Policy:

Policy	Letter Grade	Grade Point	Assessments
80% and above	A+	4.00	Outstanding
75% to below 80%	A	3.75	Superlative
70% to below 75%	A-	3.50	Excellent
65% to below 70%	B+	3.25	Very Good
60% to below 65%	B	3.00	Good
55% to below 60%	B-	2.75	Average
50% to below 55%	C+	2.50	Below Average
45% to below 50%	C	2.25	Passing
40% to below 45%	D	2.00	Probationary
Below 40%	F	-----	Fail

List of References:
> **Course Notes:** Follow Lecture notes
> **Essential Books (Text Books)**:
> 1. Java EE 8 Application Development, David R. Heffelfinger
> 2. Java EE 7 Essentials by Arun Gupta
>
> **Recommended Reference Books**:
> 1. Architecting Modern Java EE Applications by Sebastian Daschner
> 2. Beginning EJB in Java EE 8: Building Applications with Enterprise JavaBeans, onathan Wetherbee, Massimo Nardone, Chirag Rathod, Raghu Kodali
>
> **Online Recourses**: Use Internet to get documents on specific topics

Facilities Required for Teaching and Learning:
> Projector, Whiteboard, Internet access from classroom computer, Audio/Visual equipment.

Course Policies and Procedures:
1. **Class attendance:** Regular attendances of classes are mandatory and students will be assigned F automatically if he/she misses 6 consecutive classes.
2. **Late submission of work:** Late submission will be followed by penalty, please maintain deadlines.

3. **Unfair means /plagiarism:** Plagiarism will be dealt with severe penalty. Original work is encouraged as they will carry value marks.

Appendix-1: Program Learning Outcome (PLO)

PLO No.	PLO
1.	**Engineering Knowledge**
2.	**Problem Analysis**
3.	**Design/Development of Solutions**
4.	**Investigation**
5.	**Modern Tool Usage**
6.	**The Engineer and Society**
7.	**Environment and Sustainability**
8.	**Ethics**
9.	**Communication**
10.	**Individual and Team Work**
11.	**Life Long Learning**
12.	**Project Management and Finance**

Professional/Generic Skills (Detailed):

1. **Engineering Knowledge (T)** -Apply knowledge of mathematics, sciences, engineering fundamentals and manufacturing engineering to the solution of complex engineering problems;
2. **Problem Analysis (T)** – Identify, formulate, research relevant literature and analyze complex engineering problems, and reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences;
3. **Design/Development of Solutions (A)** –Design solutions, exhibiting innovativeness, for complex engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, economical, ethical, environmental and sustainability issues.
4. **Investigation (D)** Conduct investigation into complex problems, displaying creativeness, using research-based knowledge, and research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions;
5. **Modern Tool Usage (A & D)** -Create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex engineering activities, with an understanding of the limitations;
6. **The Engineer and Society (ESSE)** -Apply reasoning based on contextual knowledge to assess societal, health, safety, legal, cultural, contemporary issues, and the consequent responsibilities relevant to professional engineering practices.
7. **Environment and Sustainability (ESSE)** -Understand the impact of professional engineering solutions in societal, global, and environmental contexts and demonstrate knowledge of and need for sustainable development.
8. **Ethics (ESSE)** –Apply professional ethics with moral values and commit to responsibilities and norms of professional engineering code of practices.
9. **Communication (S)** -Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
10. **Individual and Team Work (S)** -Function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings.
11. **Life Long Learning (S)** -Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.
12. **Project Management and Finance (S)** -Demonstrate knowledge and understanding of engineering management and financial principles and apply these to one's own work, as a member and/or leader in a team, to manage projects in multidisciplinary settings, and identify opportunities of entrepreneurship.

....
Course Coordinator/ Teacher   *Head of the Department*

Date:

Date: