Course Specifications

Course Title:	Enterprise Application Development
Course Code:	COMP 417
Program:	BS in Computer Science
Department:	Computer Science
College:	College of Computer Science and Information Technology
Institution:	Jazan University, Jazan

Table of Contents

A. Course Identification

1. Credit hours:	**03 Hours**
2. Course type	
a.	University ☐ College ☐ Department ☑ Others ☐
b.	Required ☑ Elective ☐
3. Level/year at which this course is offered:	**Level -7 / Year 04**
4. Pre-requisites for this course (if any)**:**	**None**
5. Co-requisites for this course (if any)**:**	**None**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	60	100
2	**Blended**		
3	**E-learning**		
4	**Correspondence**		
5	**Other**		

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	**Lecture**	26
2	**Laboratory/Studio**	26
3	**Tutorial**	
4	**Others** (specify) **Final Exams and Review**	8
	Total	100
Other Learning Hours*		
1	**Study**	30
2	**Assignments**	10
3	**Library**	
4	**Projects/Research Essays/Theses**	
5	**Others** (specify)	
	Total	40

* The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

1. Course Description

This course aims to introduce the development of stand-alone and dynamic web applications with respect to solve real world problems using one to many tier architectures. In order to construct the stand-alone and web applications, it mainly focuses on techniques to design and implement front-end, back-end and business logics using various java-based technologies.

2. Course Main Objective

1. Describe the foundation of good programming skills for designing of object oriented based software.
2. Explain how java library helps to construct GUI, event handling, database access for developing a stand-alone system.
3. Define the concepts of client and server side programming scripts as well as the role of web server and application servers.
4. Show the layer approaches to develop dynamic web applications.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge:**	
1.1	**Define** the fundamental concepts of object-oriented approach to build window and web page based user interfaces.	K1
1.2	**Describe** the mechanism to make use of data base objects in order to communicate with outside users using GUI and web page clients.	K2
2	**Skills :**	
2.1	**Use** class libraries to design Model-View-Design pattern for the development of dynamic web applications	S1
2.2	**Evaluate** the user sessions determined by cookies, URL rewriting and session objects by servlet and JSP.	S1
2.3	**Develop** full-fledged web applications using JDBC, servlet, JSP and Java Bean.	S2
2.4	**Apply** middle layer to control the data flow from front-end to back-end with respect to request and responses for the web pages	S3
3	**Competence:**	
3.1	**Demonstrate** the concepts, techniques and patterns used for the system development in a team with distributed responsibilities.	C2
3...		

C. Course Content

No	List of Topics	Contact Hours
1	**GUI in Java:** Introduction, Overview of swing components, common super classes swing components, Event handling, Steps to event-handling, Common GUI event types and Listener interface, Button click event program	2T+2P
2	**JDBC and Database:** Basic steps in using JDBC, establish the connection, Execute the query and process the results. Demo-1: select records from a table, Demo-2: Insert records in a table (Data entered through GUI)	4T+4P
3	**Web Programming in Java :** Web applications, Components of web application, Static VS Dynamic web pages, Components of Java web application, JSP & servlet introduction, MVC Design, Architecture for java web application. Advantage of JSP, Job of servlet,	2T+2P
4	**Servlet:** servlet architecture, Servlet generates HTML	4T+4P

	Servlet life cycle, An example using Initialization parameters, Reading form data from servlets: Example program, Example program for reading all parameters. Reading HTTP request headers from servlets, HttpServletRequest methods for reading headers, case study- Printing all headers, generating server response , A register servlet, RequestDispatcher, Login system in servlet using database.	
5	**Cookies**: define cookie, benefits of cookies, The servlet cookie API: creating cookie, attributes, place in response header, reading cookie from client. Examples of setting and reading cookies. **Session Tracking:** Need for session tracking & solutions: cookies, URL-Rewriting, Hidden form fields,session tracking in servlets, Session tracking API: looking up the HttpSession object associated with the current request, looking up information associated with a session, associating information with a session, Terminating sessions.Case study: A servlet showing per client access counts.	4T+4P
6	**JSP:** Overview of JSP, Scripting elements, expression. JSP program execution, small JSP programs. Using expressions as attribute values, Scriptlets, Declarations, pre- defined variables, Directives: page and its attributes, content type program, error page program. Include directive, including files at page translation time, sample program, including files at request time, <jsp:include>, sample program, <jsp:plugin>	6T+6P
7	**Java Bean:** Basic bean use, accessing bean properties, setting bean properties:simple case, Example: StringBean, Setting bean properties using getParameter(), Associating all properties with input parameters. Forwarding request from servlet to JSP pages using RequestDispatcher, Forwarding request from JSP pages. JDBC in JSP: An example program to execute SELECT&INSERT queries.	4T+4P
Total		

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge**		
1.1	**Define** the fundamental concepts of object-oriented approach to build window and web page based user interfaces.	• Lectures/Presentations • Media Lectures • Lab Demonstration	• Exam 1 • Assignment- 1 • Lab Exam • Final Theory Exam
1.2	**Describe** the mechanism to make use of data base objects in order to communicate with outside users using GUI and web page clients.	• Lectures/Presentations • Media Lectures • Lab demonstration	• Exam 1 • Assignment- 1 • Lab Exam • Final Theory Exam
2.0	**Skills**		
2.1	**Use** class libraries to design Model-View-Design pattern for the	• Lectures /Presentations	• Exam 1 • Assignment – 1

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
	development of dynamic web applications	• Media Lectures • Lab Demonstration • Tutorials	• Lab Exam • Final Theory Exam
2.2	**Evaluate** the user sessions determined by cookies, URL rewriting and session objects by servlet and JSP.	• Lectures /Presentations • Media Lectures • Lab Demonstration • Tutorials	• Exam 1 • Assignment -2 • Lab Exam • Final Theory Exam
2.3	**Develop** full-fledged web applications using JDBC, servlet, JSP and Java Bean.	• Lectures /Presentations • Lab Demonstration • Media Lectures Group discussion	• Mini Project • Lab Exam • Final Theory Exam
2.4	**Apply** middle layer to control the data flow from front-end to back-end with respect to request and responses for the web pages.	• Lectures /Presentations • Media Lectures Tutorials	• Assignment – 2 • Final theory Exam • Mini Project
3.0	**Competence**		
3.1	**Demonstrate** the concepts, techniques and patterns used for the system development in a team with distributed responsibilities.	• Group Discussion	• Mini Project
3.2			

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Exam-1	8th Week	10%
2	Assignment - 1	9th Week	10%
3	Mini Project	12th Week	20%
4	Lab Exam	14th Week	20%
5	Final Theory Exam	15th Week	40%
6			
7			
8			

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

Department have an arrangement for "Academic Counseling and Support" for each student by the department. The Department Coordinator nominates faculty members for "**Student Academic Advisory Committee"** every semester. These **"Academic Advisors"** are

responsible for student counseling and advising to a group of fix number of students (around10-15 students) and maintaining students' files. At the beginning of semester and at time of course registration all students take counseling from Academic Advisor according to his previous grades and coverage of pre-requisite course and follow-up.

Also students with GPA below than 2.00 are remained under deep observation and continuous meetings with respective course teachers about their performance are arranged to help and support the students. The course teacher is to be associated with this course provide a proper guidance for students who are looking to focus on their future career based on their intellectual interests, identify better opportunities related to this course and connections in their academic fields.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	• Paul Deitel and Harvey Deitel, "Java How TO PROGRAM", Tenth Edition, Pearson Publications,2015, ISBN-13 9780133807806 • Marty Hall and Larry Brown, "Core Servlets and Java Server Pages Vol 1: Core Technologies", Pearson Publications, Second Edition, 2004. • Joel Murach and Andrea Steelman, "Java Servlets and JSP", 2nd edition, Mike Murach & Associates.
Essential References Materials	• Head First Servlets & JSP Second Edition by Bryan Basham, Kathy Sierra & Bert Bates copyright @ 2008 ISBN 1-800-889-8969 / 707-827-7019 • James M Slake Programming and Problem Solving with java Thomson leaning 2000 , The McGraw- Hills,ISBN : 0-534-37486-7 • C Thomas Wu "An introduction to object oriented programming with java" Tata McGraw Hills copyright @2005, ISBN: 0070611033
Electronic Materials	• https://www.journaldev.com/1854/java-web-application-tutorial-for-beginners • https://www.guru99.com/java-swing-gui.html • https://www.tutorialspoint.com/jdbc/ • https://www.javatpoint.com/servlet-tutorial • https://www.tutorialspoint.com/jsp/
Other Learning Materials	•

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classroom equipped with projector and whiteboard and sufficient seating arrangements. Lab with software installed and individual computer terminal for each student.

Item	Resources
Technology Resources (AV, data show, Smart Board, software, etc.)	Whiteboards and projectors for classroom and lab Following software for lab work: • Netbeans 8.2 with JDK & Tomcat • UcanAccess
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Sufficiency of resources and facilities for students	Students	Course evaluation survey form
Effectiveness of teaching / learning process	Students	Course evaluation survey form
Effectiveness of teaching / learning process	CRC / QAU / HoD	Course reports / result analysis
Quality of learning Resources	Track leaders / CRC	Review meetings and star rating with suggestions for further modification and improvements
Verifying standards of student achievement / evaluation	HoD / committee nominated by HoD	Random re-checking of evaluated answer sheets
Achievement of course learning outcomes	Course Teachers / QAU	CLO assessment template that is further verified at course coordinator and QAU level.

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	**DEPARTMENT COUNCIL**
Reference No.	**05**
Date	**WEDNESDAY 06-02-2019**