Gyanmanjari
Innovative University

Course Syllabus
Gyanmanjari Institute of Technology
Semester-2 (B.Tech.)

Subject: Object Oriented Programing – II-BETCE12302

Type of course: Major (Core)

Prerequisite: Basic Knowledge of JAVA

Rationale:

This course offers a comprehensive exploration of web-based Java programming, covering essential concepts and practical techniques. Students delve into technologies like JDBC and Hibernate for seamless database integration, server-side tools for robust Java applications, and web services for cross-platform communication. The course emphasizes client-service architecture's importance in web-based applications, addressing limitations of basic Java with advanced tools. Servlets and Java Server Pages (JSPs) are introduced for creating dynamic web applications. Web socket programming facilitates real-time communication between web clients and servers, providing a scalable alternative to HTTP. In summary, this course equips students with a strong foundation in web-based Java programming, empowering them to develop sophisticated applications and enable seamless internet communication.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks					Total Marks
				Theory Marks		Practical Marks		CA	
CI	T	P	C	ESE	MSE	V	P	ALA	
4	0	2	5	60	30	10	20	30	150

Legends: CI-Class Room Instructions; T – Tutorial; P - Practical; C – Credit; ESE - End Semester Examination; MSE- Mid Semester Examination; V – Viva; CA - Continuous Assessment; ALA- Active Learning Activities.

Course Content:

Sr. No	Course content	Hrs.	% Weightage
1	**File Handling & Network Programming with Java:** Explain basics of streams, stream classes, creation, reading and writing files in context to file handling. **Network Programming with Java:** Network Programming With java.net Package- Inet Address class, URL class, URL Connection class. Establishing two-way communication between Server and Client - TCP/IP client sockets, TCP/IP server sockets.	10	20
2	**Java Data Base Connectivity (JDBC)** Describe the basics of JDBCand its connectivity. The JDBC API. The Statement Interface, Prepared Statement, Callable Statement, the ResultSet Interface, Transaction processing – commit, rollback, savepoint Explain different types of JDBC drivers and their advantages and disadvantages. database operations like creating tables, operations using SQL CRUD operation.	15	20
3	**Servlets:** Introduction to Servlets, Life Cycle of Servlet. Creating, configuring and deploying echo servlet on Tomcat Server Parameters and Attributes – HttpServletRequest Interface, ServletContext and ServletConfig Interface, Request Delegation – RequestDispatcher Interface. Exploring Session Tracking Mechanisms. Connecting and reading database/table records and displaying them using servlet, Advantages and Disadvantages of Servlet.	15	25
4	**Java Server Pages (JSP):** JSP Scripting Elements JSP Expressions. Difference between JSP and JSP Declarations Simple JSP program to fetch database records.	10	20
5	**Hibernate:** Overview of Hibernate, Hibernate Architecture, Hibernate Mapping Types, Hibernate O/R Mapping, Hibernate Annotation Hibernate Query Language	10	15

Continuous Assessment:

Sr. No	Active Learning Activities	Marks
1	**Object-Oriented Proficiency Test:** Subject faculty provide questions to students based on OOP concept which may helpful for job interview and students have to answer it on GMIU web portal.	10

2	**Discovering Tech Stack** Discovering the current framework in Java involves exploring the tech landscape, with popular choices. List websites that utilize Java frameworks for web development and upload on GMIU web portal.	10
3	**Nano Endeavor:** Create a web-based Java project incorporating CRUD operations to address a practical issue, design a team of two students to collaborate and enhance their skills in Java web development and upload on GMIU web portal.	10
	Total	30

Suggested Specification table with Marks (Theory):60

Distribution of Theory Marks (Revised Bloom's Taxonomy)						
Level	Remembrance (R)	Understanding (U)	Application (A)	Analyze (N)	Evaluate (E)	Create (C)
Weightage	20%	35%	35%	10%	-	-

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Course Outcome:

After learning the course, the students should be able to:	
CO1	Develop Java Application using file Handling. Develop networked applications in java using network protocols, socket programming, and related technologies
CO2	Implement basic database operations using JDBC.
CO3	Develop server-side programs using Servlets,
CO4	Implement Java Server Pages application using JSP tags
CO5	Solve database-driven Java applications using Hibernate ORM framework and Implement simple web service using Java technologies

List of Practical

Sr. No	Descriptions	Unit No	Hrs.
1	Write a program that reads words from a text file and displays all the nonduplicate words in descending order. The text file is passed as a command-line argument	1	4
2	Write a client server program where client sends two numbers and server responds with square of them.	1	2
3	Develop chat application using socket programming.	1	4
4	Develop a database application that uses any JDBC driver.	2	2

Object Oriented Programing – II- BETCE12302

5	Develop a program to present a set of choice for user to select a product and display the price of product.	2	2
6	Write an HTML code to create login form having one submit button, two textboxes labeled as Login name and Password as respectively. Write a Servlet class named as ReadParameter to read these two parameters and display entered parameters values on the page using doGet() or doPost() method when user clicked on submit button.	3	4
7	Create a web form which processes servlet and demonstrates use of cookies and sessions.	3	4
8	Develop a simple JSP program for user registration and then control will be transfer it into second page.	4	4
9	Develop a student login application using MVC architecture (JSP & servlet). display whether student gets Successfully logged in or not.	4	2
10	Develop a simple hibernate Web Application that displays all records stored in a student table having attributes student_id, student_name and student_branch.	5	2
		Total	30

Instructional Method:

The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

Students will use supplementary resources such as online videos, NPTEL/SWAYAM videos, e-courses, Virtual Laboratory
The internal evaluation will be done on the basis of Active Learning Assignment
Practical/Viva examination will be conducted at the end of semester for evaluation of performance of students in laboratory.

Reference Books:

[1] JAVA SERVER PROGRAMMIG JavaEE-7 J2EE 1.7), Black Book, DREAMTECH PRESS

[2] J2EE: The complete Reference, James Edward Keogh, McGraw Hill Education

[3] THE COMPLETE REFERENCE JSP 2.0, PHIL HANNA, BPB

[4] Complete Reference Java 2, Herbert Schildt, McGraw Hill Education

[5] Web Technology with Advanced Java, Soumadip Ghosh, University Press