Course Title:	**Development of advanced web applications (JEE /.NET)**
Course Code:	CSE563/1
Program:	Master Degree In Computer Engineering
Department:	Computer Engineering
Course coordinator:	Dr. Mouna HALIMA
Institution:	Private Higher School of Engineers of Gafsa (ESIP)

A. Course Identification

1. Credit hours: **3 (1.5-0-1.5)**

2. Course type

a. College ☐ Department ■ Others ☐

b. Fundamental ■ Transversal ☐ Optional ☐

3. Level/year at which this course is offered: 3.1/3

4. Pre-requisites for this course (if any): Object-oriented programming, Databases and SQL, CSE222

1. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Self-study	Total workload
1	**Traditional classroom**	…..	22	52
2	**Blended**	30		
3	**E-learning**	.....		
4	**Distance learning**	.....		
5	**Other ()**	.....		

2. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	15
2	**Laboratory/Studio**	15
3	**Tutorial**	-
4	**Others** (specify)	-
	Total	30

B. Course Objectives and Learning Outcomes

Course Description

This course provides students with an in-depth understanding of advanced web development using Java Enterprise Edition (JEE) and .NET technologies. It covers enterprise web application architecture, MVC design patterns, server-side development, and enterprise-level database integration.
Students will gain hands-on experience in building dynamic, scalable, and secure web applications by working with JEE (Jakarta EE) and Microsoft .NET frameworks. They will learn how to design robust applications using Servlets, JSP, Enterprise JavaBeans (EJB), ASP.NET, and MVC architecture.
By the end of the course, students will be able to develop, deploy, and manage enterprise web applications, applying best practices for performance, security, and scalability.

Course Main Objective

- ✓ Understanding the fundamental concepts of Java EE (Enterprise Edition), including its purpose, architecture, and components.
- ✓ Ability to explain the role of Java EE in building enterprise-level applications and its advantages.
- ✓ Ability to differentiate between the Model, View, and Controller components in MVC and comprehend how they interact
- ✓ Ability to develop and deploy EJB components within a Java EE application.
- ✓ Contribution to the iterative development process, meeting project milestones, and adaptability to changing project requirements.
- ✓ Competence in using version control systems (e.g., Git) and project management tools.

1. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding**	
1.1	✓ Understanding the fundamental concepts of Java EE (Enterprise Edition), including its purpose, architecture, and components.	PLO.K 2
1.2	✓ Acquire a wealth of expertise in the domain of developing web applications advanced and concentrated on problems and developments in recherche specifiques in the industry.	PLO.K 3
2	**Skills**	
2.1	✓ Develop the ability to effectively and clearly communicate complex technical concepts related to web development, as well as relevant research findings.	PLO.S2
	✓ Demonstrate a thorough understanding of the job market requirements for advanced web development, applying best practices and producing solutions that meet professional standards and industry expectations.	PLO.S3

CLOs		Aligned PLOs
2.3	✓ Develop the ability to apply knowledge acquired in the classroom to discussions and social activities related to web development, thereby fostering a deeper understanding of industry trends and challenges	PLO.S4
3.2	✓ Develop skills in managing embedded systems in advanced web applications, optimizing their use to meet specific project needs.	PLO.S6
	✓ Apply agile development methodologies to manage dynamic aspects of the project, taking into account changing requirements and priorities.	PLO.S7

C. Course Content

No	List of Topics	Contact Hours
1	Chapter1: Introduction to Java EE and MVC Architecture • Overview of Java EE architecture and components • Introduction to MVC architecture and its benefits • Setting up a development environment and create « Hello world » app (first app).	7
2	Chapter2: Servlets and JSPs • Introduction to web applications and HTTP • Understanding Servlets and JSPs • create web pages with JSPs and Servlets	7
3	Chapter3: Enterprise JavaBeans (EJB) with MVC Architecture • Developing Message-Driven Beans • Understanding container-managed persistence using MVC architecture	7
4	Chapter4: Develop JEE app in groups and preparation for exam (doing an exam simulation)	9h
Total		30

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 and Understanding**		
K.2	✓ Understanding the fundamental concepts of Java EE (Enterprise Edition), including its purpose, architecture, and components.	- Lecturing - Project-Based Learning - Hands-On Labs and Coding Exercises	Assignments, Quizzes, Exams,
K.3	✓ Acquire a wealth of expertise in the domain of developing web applications advanced and concentrated on problems		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
	and developments in recherche specifiques in the industry.		
2.0	**Skills**		
S.2	✓ Develop the ability to effectively and clearly communicate complex technical concepts related to web development, as well as relevant research findings.	- Lecturing - Project-Based Learning - Class discussions - Assignments - Hands-On Labs and Coding Exercises	Assignments, Quizzes, Exams,
S.3	✓ Demonstrate a thorough understanding of the job market requirements for advanced web development, applying best practices and producing solutions that meet professional standards and industry expectations.		Assignments, Report, Quizzes, Exams,
S.4	✓ Develop the ability to apply knowledge acquired in the classroom to discussions and social activities related to web development, thereby fostering a deeper understanding of industry trends and challenges		
V.2	✓ Develop skills in managing embedded systems in advanced web applications, optimizing their use to meet specific project needs.	- Lectures - Class discussions - Assignments - projects - Project-Based Learning	Assignments, Report, Quizzes, Exams
V.4	✓ Apply agile development methodologies to manage dynamic aspects of the project, taking into account changing requirements and priorities.		Assignments, Report, Quizzes, Exams

2. Assessment Tasks for Students

	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Practical Work (written or oral)	Weekly	00%
2	Quizzes, Homework assignments	Random	00%
3	Final Exam	11	100%

E. Student Academic Counseling and Support

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

- Office hours - Blackboard interface - Academic advisor - Bibliotic

F. Learning Resources and Facilities

1. 1.Learning Resources

Required Textbooks	• "Design Patterns: Elements of Reusable Object-Oriented Software" by Erich Gamma, Richard Helm, Ralph Johnson, and John Vlissides: This book is a classic resource for learning software design patterns. It covers a wide range of patterns that can be used in Java EE applications, such as the Model-View-Controller pattern, the Factory pattern, and the Observer pattern. The book includes many code examples and discussions of best practices. http://www.javier8a.com/itc/bd1/articulo.pdf
Essential References Materials	• Oracle Java EE Documentation: Oracle provides extensive documentation for Java EE, including guides, tutorials, and reference materials. This documentation covers all aspects of Java EE, from basic concepts to advanced features and best practices. The Oracle Java EE documentation is an essential resource for understanding the nuances of the Java EE platform and how to use it effectively. • Java EE 8 Tutorial: The Java EE 8 Tutorial is a comprehensive guide to developing Java EE applications. It covers all the major components of Java EE, including Servlets, JSPs, EJBs, JPA, and more. The tutorial includes numerous code examples, exercises, and quizzes to help readers solidify their understanding of the material.
Electronic Materials	• Lecture material in PPT and pdf to sumbit it in ESIP platform • PC • Any Related material including the YouTube videos relating to JEE /.NET as : ➢ Java EE forums on Stack Overflow: Stack Overflow is a popular Q&A forum for programmers. Students can ask questions about Java EE concepts and get answers from experienced developers. They can also browse through existing questions and answers to learn from other people's experiences. ➢ Oracle Java EE Tutorial: The official Java EE tutorial from Oracle provides a comprehensive overview of Java EE and its components, including Servlets, JSPs, EJBs, JPA, and more. The tutorial includes code samples, exercises, and quizzes to help students solidify their understanding of the material. • Blackboard
Other Learning Materials	NA

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	**classroom board software …**
Technology Resources (AV, data show, Smart Board, software, etc.)	**data show;**

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment.	Students, course coordinator, Alumni, Employers	Direct/Indirect
Extent of achievement of course learning outcomes.	Faculty, Program Leaders, quality department	Direct
Quality of Learning resources	Faculty, Program Leaders,	Direct, Indirect
Teaching and learning quality and effectiveness.	Students, Faculty Program Leaders,	Direct, Indirect

H. Specification Approval Data

Council / Committee	Computer Engineering Council
Date	11/09/2023