



INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal - 500 043, Hyderabad, Telangana

COURSE CONTENT

ENTERPRISE COMPUTING								
VII Semester: CSE								
Course Code	Category	Hours/Week			Credits	Maximum Marks		
ACSD59	Elective	L	T	P	C	CIA	SEE	Total
		3	0	0	3	40	60	100
Contact Classes: 48	Tutorial Classes: Nil	Practical Classes: Nil			Total Classes: 48			
Prerequisite: Object-Oriented Programming								

I. COURSE OVERVIEW:

The course introduces concepts, technologies, and architectures used to build large-scale enterprise systems. Topics covered include enterprise application architecture, distributed systems, middleware technologies, service-oriented architecture, cloud platforms, and integration patterns. The main objective of the course is to teach students how to design, develop, and manage scalable, secure, and robust enterprise applications used in real-world industries.

II. COURSE OBJECTIVES:

The students will try to learn:

- I The foundational concepts of enterprise systems, enterprise architecture, and distributed applications.
- II The technologies and platforms used for enterprise development such as J2EE, .NET, microservices, and middleware.
- III The principles of designing scalable and secure enterprise applications that support business processes.
- IV Techniques for integrating heterogeneous systems through APIs, messaging, and service-oriented architectures.
- V The use of cloud and container-based environments for deploying and managing enterprise applications.

III. COURSE OUTCOMES:

At the end of the course students should be able to:

- CO1 Describe enterprise application architecture and identify the components of enterprise systems.
- CO2 Apply distributed computing principles to design scalable enterprise applications.
- CO3 Develop simple enterprise-level services using J2EE/.NET/Microservices frameworks.
- CO4 Integrate enterprise components using messaging, web services, and API gateways.
- CO5 Evaluate cloud-based deployment models and container orchestration for enterprise solutions.
- CO6 Compare various enterprise technologies based on scalability, performance, and security requirements.

IV. COURSE CONTENT:

MODULE – I: INTRODUCTION TO ENTERPRISE COMPUTING (09)

Enterprise computing overview; Characteristics of enterprise systems; Types of enterprise applications – ERP, CRM, SCM, HRM, Banking systems; Enterprise architectures – monolithic, layered, microservices; Introduction to distributed computing; Client–server architecture; Middleware concepts; Enterprise software development life cycle; Introduction to enterprise standards and protocols.

MODULE - II: ENTERPRISE PLATFORM TECHNOLOGIES (09)

J2EE architecture: Servlets, JSP, JDBC, EJB concepts; .NET framework: CLR, assemblies, ASP.NET, ADO.NET; Web frameworks – Spring, Django, Node.js; MVC architecture; REST and SOAP services; Enterprise messaging systems; Introduction to enterprise integration patterns.

MODULE - III: ENTERPRISE APPLICATION INTEGRATION (09)

System integration basics; API-based integration; Messaging systems – JMS, RabbitMQ, Kafka; Service-Oriented Architecture (SOA); Web services – WSDL, UDDI, SOAP;

Microservices architecture – design principles, communication patterns, API gateways; Enterprise service bus (ESB); Integration challenges and best practices.

MODULE – IV: ENTERPRISE DATA MANAGEMENT AND SECURITY (09)

Enterprise databases and data warehouses; Transaction processing systems; ACID properties, concurrency, distributed transactions; Big data platforms – Hadoop, Spark; Enterprise search systems; Identity and access management – authentication, authorization, SSO, LDAP; Security standards – OAuth, JWT, SAML; Enterprise security architecture.

MODULE – V: DEPLOYMENT, CLOUD, AND DEVOPS IN ENTERPRISES (09)

Cloud computing models – IaaS, PaaS, SaaS; Cloud platforms – AWS, Azure, GCP; Virtualization and containerization – Docker, Kubernetes; CI/CD pipelines; Application monitoring and logging; Scalability and load balancing; Enterprise deployment strategies – rolling updates, blue-green, canary; Case studies: banking systems, e-commerce platforms, government enterprise systems.

V. TEXT BOOKS:

1. Patrick Smith, “Enterprise Computing”, Pearson Education.
2. Kevin E. Murphy, “Enterprise Application Architecture”, McGraw Hill.

VI. REFERENCE BOOKS:

1. Thomas Erl, “Service-Oriented Architecture: Concepts, Technology, and Design”, Pearson, 1st Edition, 2005.
2. Ashish Mishra, “Enterprise Integration Patterns”, O’Reilly, 2019.
3. Rod Johnson, “J2EE Development with Spring Framework”, Apress, 1st Edition, 2005.
4. Jeff Carpenter, “Designing Distributed Systems”, O’Reilly, , 2st Edition, 2024.

VII. ELECTRONICS RESOURCES:

1. <https://www.oracle.com/java/technologies/>
2. <https://spring.io>
3. <https://learn.microsoft.com/dotnet>
4. <https://kubernetes.io>
5. <https://aws.amazon.com/architecture>

VIII. MATERIAL ONLINE:

1. Course Outline description
2. Tech-talk topics
3. Assignments
4. Definition and terminology

5. Tutorial question bank
6. Model question paper – I
7. Model question paper – II
8. Lecture notes
9. Early lecture readiness videos (ELRV)