MIDDLEWARE TECHNOLOGIES

(Common to CSE & IT)

Course Code :13CT1131

L	T	P	C
4	0	0	3

Course Educational Objectives:

The main objective of the course is to create a practical, wide-ranging discussion on Middleware Technologies to help students understand what is going on so they can pick out the real issues from the imaginary issues and start building complex distributed systems with confidence. Upon completion of this course the students will be able to

- Understand Distributed systems design and implementation
- Understand existing Distributed Technologies
- Use Middleware to Build Distributed Applications
- Understand Middleware Interoperability
- Understand Web services architectures

Course Outcomes:

At the end of the course the student will be able to

- Learn how to use Middleware to Build Distributed Applications
- Implement Business Processes
- Learn about MiddleWare Technologies
- Implement Business Processes
- Learn application design and IT architecture

UNIT-I (12 Lectures)

INTRODUCTION:

Moving to e-business, what is IT architecture? Why is this different from what we did before? Rewrite or evolve? , Who develops the architecture? Early days, Preliminaries, Remote procedure calls, Remote database

access, Distributed transaction processing, Message queuing, Message queuing versus distributed transaction processing, what happened to all this technology?

OBJECTS, COMPONENTS, AND THE WEB:

Using object middleware, Transactional component middleware, COM, EJB, Final comments on TCM, Internet Applications.

WEB SERVICES: Service concepts, Web services, and Using Web services: A pragmatic approach.

UNIT-II (12 Lectures)

A TECHNICAL SUMMARY OF MIDDLEWARE:

Middleware elements, The communications link, The middleware protocol, The programmatic interface, Data presentation, Server control, Naming and directory services, Security, System management, Comments on Web services, Vendor architectures, Vendor platform architectures, Vendor-distributed architectures, Using vendor architectures, Positioning, Strawman for user target architecture, Marketing, Implicit architectures, Middleware interoperability.

UNIT-III (12 Lectures)

USING MIDDLEWARE TO BUILD DISTRIBUTED APPLICATIONS:

What is middleware for? Support for business processes, Information retrieval, Collaboration, Tiers, The presentation tier, The processing tier, The data tier, Services versus tiers, Architectural choices, Middleware bus architectures, Hub architectures, Web services architectures, Loosely coupled versus tightly coupled.

UNIT-IV (12 Lectures)

SECURITY:

What security is needed, Traditional distributed system security, Web services security, Architecture and security.

APPLICATION DESIGN AND IT ARCHITECTURE

:Problems with today's design approaches, Design up front or as needed?, The role of business rules, Existing systems, Reuse, Silo and monolithic development, The role of architecture, Levels of design, Reconciling design approaches.

UNIT-V (12 Lectures)

IMPLEMENTING BUSINESS PROCESSES:

What is a process? Business processes, Information and processes, Architecture process patterns, Clarification and analysis, Error Handling, Timing, Migration, Flexibility.

TEXT BOOKS:

1. Chris Britton and Peter Eye, *"IT Architectures and Middleware: Strategies for Building Large, Integrated Systems"*, 2nd Edition, Pearson Education, 2004.

REFERENCES:

1. Qusay H. Mahmoud, *"Middleware for Communications"*, 1st Edition, John Wiley and Sons,2004.
2. Michah Lerner, *"Middleware Networks: Concept, Design and Deployment of Internet Infrastructure"*, 1st Edition, Kluwer Academic Publishers, 2000.