

MIDDLEWARE AND ENTERPRISE INTEGRATION TECHNOLOGIES				
CLASS T.E. (INFORMATION TECHNOLOGY)			SEMESTER VI	
HOURS PER WEEK	LECTURES	:	04	
	TUTORIALS	:	--	
	PRACTICALS	:	02	
			HOURS	MARKS
EVALUATION SYSTEM:	THEORY		3	100
	PRACTICAL		-	-
	ORAL		-	25
	TERM WORK		-	25

Objectives of the Course:

- IT systems are more and more integrated with other software systems.
- The knowledge of integrating these systems by using middleware technologies can be a key competence for IT engineers. Middleware is commonly understood as an intermediary software layer between the application and the operating system, which encapsulates the heterogeneity of the underlying communication network, operating system or hardware platform.
- This course provides details about the modern component platforms. Based on practical examples, details about modern middleware technologies are studied. Students get the chance to gain in-depth knowledge popular middleware platforms.

1. Introduction to Object Oriented Systems

Preview of Object-orientation, Concept of distributed object systems, Reasons to distribute for centralized objects. Client-server system architecture, Multi tier system architectures. File Server, Database Server, Group Server, Object Server, Web Server.

2. Introduction to Middleware Technologies

General Middleware, Service Specific Middleware, Client/Server Building blocks – RPC - Messaging – Peer – to – Peer, Java RMI.

3. Introduction to Distributed Objects

Computing standards, OMG, Overview of CORBA, Overview of COM/DCOM, and Overview of EJB.

4. EJB Architecture

Overview of EJB software architecture, View of EJB Conversation, Building and Deploying EJBs, Roles in EJB.

5. EJB Applications

EJB Session Beans, EJB entity beans, Lifecycle of Beans, EJB clients, Steps in developing an application with EJB, EJB Deployment.

6. CORBA

Introduction and concepts, distributed objects in CORBA, CORBA components, architectural features, method invocations, static and dynamic: IDL (Interface Definition Language) models and interfaces. Structure of CORBA IDL, CORBA's self-describing data; CORBA interface repository. Building an application using CORBA.

7. CORBA Services and CORBA Component Model

Overview of CORBA Services, Object location Services, Messaging Services, CORBA Component Model.

8. COM and .NET

Evolution of DCOM, Introduction to COM, COM clients and servers, COM IDL, COM Interfaces, COM Threading Models, Marshalling, Custom and standard marshalling, Comparison COM and CORBA, Introduction to .NET, Overview of .NET architecture, Remoting.

9. Service Oriented architecture(SAO) Fundamentals

Defining SOA, Business value of SOA, SOA characteristics, Concept of a service, Basic SOA , Enterprise Service Bus (ESB), SOA enterprise Software Models.

10. Web Services Technologies

XML Technologies - XML, DTD, XSD, XSLT< XQUERY, XPATH, Web Services and SOA, WSDL, SOAP, UDDI, WS Standards (WS-*), Web Services and Service Oriented Enterprise (SOE), WS _ Coordination and Transaction, Business Process Execution Language for Web Services (BPEL4WS)

Text Books

1. G. Sudha Sadasivam “Distributed Component Architecture”, Wiley India edition.
2. Thomas Erl “Service Oriented Architecture: Concepts , Technology & Design”, Prentice Hall
3. G. Brose, A Vogel and K. Duddy, “Java programming with CORBA”, 3rd Edition, Wiley-dreamtech, India John Wiley and sons

References

1. Robert Orfali, Dan Harkey, “Client/server Programming with Java & Corba W/cd”, Wiley India Pvt. Ltd.
2. Clemens Szyperski, “Component Software: Beyond Object-Oriented Programming”, Pearson Education.
3. A. Tanenbaum, M. Van Steen: Distributed Systems (II Edition), Pearson Education, 2007
4. Bill Burke, “Enterprise JavaBeans 3.0”, 5th Edition, O’Reilly Publications.
5. Sudha Sadasivam “Component Based technology” , Wiley India
6. Ed Roman, “Mastering Enterprise Java Beans”, John Wiley & Sons Inc.,
7. Mowbray, “Inside CORBA”, Pearson Education.
8. Jason Pritchard, "COM and CORBA side by side", Pearson Education
9. Introduction to C# Using .NET Pearson Education
10. C# How to program, Pearson Education
11. Andrew Troelsen, “C# and the .NET Platform”, Apress Wiley-dreamtech, India Pvt. Ltd.
12. Don Box, "Essential COM", Pearson Education.

13. Tom, Valesky, "Enterprise Java Beans", Pearson_Education

Term Work

Term work shall consist of at least 10 assignments/programming assignments and one written test.

Marks

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| 1. Attendance (Theory and Practical) | 05 Marks |
| 2. Laboratory work (Experiments and Journal) | 10 Marks |
| 3. Test (at least one) | 10 Marks |

The final certification and acceptance of TW ensures the satisfactory performance of laboratory Work and Minimum Passing in the term work.

Suggested Topics for Experiment

1. RPC Messaging
2. Creating a distributed Object Application using RMI (DNS, distributed game, some business application etc)
3. Concept addressing COM/DCOM
4. Component framework
5. Mini projects, one business application each to be programmed using CORBA, EJB, COM, .NET
6. One mini project for creating a web service