



SYLLABUS

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| Course Title | Distributed Computing |
| Course Code | MCAL208 |
| Course Credit | Theory(Hrs) : 3 |
| | Practical(Hrs) : 0 |
| | Tutorial(Hrs) : 0 |
| | Credits : 3 |

Course Objectives

The objectives of the course are:

- To understand the differences among: concurrent, networked, distributed and mobile computing
- To learn resource allocation, deadlock detection and avoidance techniques
- To implement remote procedure calls
- To explore the client-server paradigm and implementation of simple client server Applications
- To learn web services protocol

Detailed Syllabus

| Sr. No. | Name of chapter & details | Hours Allotted |
|--------------------|---|-----------------------|
| Section – I | | |
| 1 | Distributed Computing Introduction , Definitions , History of Distributed Computing , Distributed Computing Models, Strengths and Weakness of Distributed Computing, Architecture of Distributed Applications | 05 |

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| 2 | Communication Basic of Communication, Inter process Communication, Message passing, and client- server system. Layered Protocols, Remote Procedure Call, Remote Object invocation , Message – oriented communication , stream – oriented communication | 07 |
| 3 | Processes Thread , Client , Servers, Code Migration , Software Agent, Blocking versus Non Blocking Primitives, Buffered verses unbuffered primitives , Client/Server Model | 05 |
| 4 | Synchronization Clock Synchronization, Logical Clocks, Physical Clocks, Global state, Mutual exclusion, Event Synchronization, Timeouts and Threading, Deadlocks and Timeouts. Atomic Transaction | 06 |
| Section – II | | |
| 5 | File System Distributed databases : Distributed DBMS Architecture ,Storing Data in a Distributed DBMS ,Distributed DBMS ,Distributed catalog Management , Distributed query processing ,Updating distributed data, Distributed transaction management , Distributed Concurrency control , Recovery | 06 |
| 6 | Name Services Introduction, Name services and the Domain Name System, Directory and discovery services, Case study of the Global Name Service | 05 |
| 7 | Distributed Objects Message Passing versus Distributed Objects, An Archetypal Distributed Object Architecture, Distributed Object Systems, Remote Method Invocation, The Java RMI Architecture, The API for the Java RMI, A Sample RMI Application, Steps for Building an RMI Application, Testing and Debugging, Comparison of RMI And Socket APIs | 07 |
| 8 | The Common Object Request Broker Architecture The Basic Architecture, The CORBA Object Interface, Inter-ORB Protocols, Object Servers and Object Clients, CORBA Object References, CORBA Naming Service , CORBA Object Services, Object Adapters, Java IDL | 05 |

Instructional Method and Pedagogy:

- Lectures will be conducted on the basis of Classroom Response Systems with the use of multimedia projector and black board.
- Assignments based on course contents will be given at the end of each unit/topic and will be evaluated at regular interval.

Course Learning Outcomes:

On the completion of the course, students will be able to:

- **Implement** various objects in computing
- **Understand** the concept of Corba
- **Design** and **build** application programs on distributed computing
- **Develop** appropriate variations of existing solutions to meet the development contexts
- **Develop, test** and **debug** RPC based client –server programs

Text books:

- Title : Distributed Computing, Oxford University Press, 2010
Author(s) : Sunita Mahajan , Seema Shah

Reference Books:

- Title : Distributed Computing Principles and Applications, Pearson Education
Author(s) : M. L. Liu
- Title: Distributed Systems: Computing over Networks, PHI
Author(s): Crichlow
- Title: Distributed Systems – Principles and Paradigms, PHI
Author(s): Tanenbaum & Sten.
- Title : SOA using JAVA Web Services, Prentice Hall
Author(s) : Mark Hansen

Additional Resources

- http://www.it.uom.gr/teaching/distrubutedSite/DistSys_bham/index.html
- <http://web.cs.wpi.edu/~cs4513/d14/slides/web.pdf>
- <http://www.dre.vanderbilt.edu/~schmidt/tutorials-corba.html>
- <http://www.disco.ethz.ch/lectures/ss04/distcomp>