

Course Code	Course Name	Load Distribution (LT P C)
DTCS-501	Microprocessor and Programming	3 0 0 3

Learning Outcomes:

1. Understand the basic architecture and features of a 8085 microprocessor.
2. Understand the basics of 8086 microprocessor and its organization.
3. Understand the 8086 instruction set which will help students to write program themicroprocessor.
4. comprehend the assembly programming and tools related to assembly programming.
5. Design the assembly programs for microprocessor and its interfacing with other devices.

Unit 1:

6 hours

Basics of Microprocessor:

Evolution of Microprocessor and types, Silent features of 8085 Microprocessor, architecture of 8085 (Block diagram), register organization, limitations of 8-bit Microprocessor.

Unit 2:

8 hours

16-bit Microprocessor 8086:

Silent features of 8086 Microprocessor, architecture of 8086 (Block diagram, signal description), register organization, concepts of pipelining, memory segmentation and memory address generation. Minimum and Maximum Mode operation and diagram.

Unit 3:

10 hours

8086 Instruction set:

Machine Language Instruction format, addressing modes, Instruction set (Arithmetic, logical, data transfer, bit manipulation, string, program control transfer, process control).

Unit 4:

9 hours

Assembly Programming:

The art of assembly Language Programming, Program development steps defining problem, algorithms flowchart, initialization checklist, choosing instructions, converting algorithms to assembly language programs. Assembly Language Programming Tools Editors, Assembler, Linker, Debugger. Assembler directives, model of 8086 assembly language programming, programming using assembler.

Unit 5:

9 hours

Procedure and Macro:

Defining Procedure (Directives used, FAR and NEAR, CALL and RET instructions), Defining Macros. Assembly Language Programs using Procedure and Macros.

System Interfacing:

Interfacing Techniques (I/O mapped I/O, Memory mapped I/O, memory and I/O addressing, 8086 addressing, and address decoding, memory interfacing as Even and Odd bank).

Text Books:

1. Douglas V-Hall, Microprocessor & interfacing (programming & hardware),Tata McGraw Hill.
2. An introduction to the Intel family of Microprocessors, James L. Antonakos, Pearson Education Asia.

Reference Books:

1. John Uffenbeck, The 8086/88 Family:Design, Programming & Interfacing, PHI.

Course Code	Course Name	Load Distribution (LT P C)
DTCS-502	Multimedia and Animation Techniques	3 0 0 3

Learning Outcomes:

1. Understand the multimedia frameworks and their application.
2. Understand various compression and decompression techniques and file formats of multimedia files.
3. Understand various multimedia authoring systems and user interface for interacting with the applications.
4. Comprehend the components and architecture of various distributed multimedia systems.
5. Understand different tools for creating, editing and processing multimedia files.

Unit 1:

8 hours

Multimedia Elements Multimedia Application:

I/P, O/P devices, Evaluation of Multimedia systems, Storage media. Architecture & Issues For Distributed Multimedia System: Multimedia System Architecture, Distributed Multimedia, Synchronization, Orchestration & QOS Architecture, Framework for Multimedia System.

Unit 2:

12 hours

Compression/Decompression & File Formats:

Need, Types, Evaluating & Visibility, Video Compression Technique, Introduction to Standardization of Algorithm, File Formats, History of RIF, TIFF, Introduction to RIFF, AVI, JPEG-objectives, Architecture, JPEG-DCT encoding Quantization. PEG-stastical coding, predictive lossless coding, JPEG-performance, MPEG-objectives, Architecture, BIT stream syntax performance, MPEG2 & MPEG4.

Unit 3:

7 hours

Multimedia Authoring and User Interface:

Multi Media Authoring System and its type, Hypermedia Application Design consideration, User Interface Design, Information Access, Object Display / Playback Issues.

Unit 4:

7 hours

Distributed Multimedia Systems:

Components of Distributed Multimedia Systems, Distributed Client Server Operation, Multimedia Object Server, Multi Server Network topologies, Distributed Multimedia Databases.

Unit 5:

8 hours

Multimedia Tool:

Introduction to Multimedia tool – Flash, Creating & Modifying elements, Line tool, fill/attributes, different shapes, text tools & pen tool, Selecting lines fill with arrow tool, selecting shapes, using lasso tool, performing basic editing tools, selecting & deselecting elements, modifying created objects.

Text Books:

1. Koegel Buford, Multimedia Systems, Pearson Education.
2. Free Halshall, Multimedia Communication, Pearson Education.

Reference Books:

1. S K Chang, T F Znati, S T Vuong. Advances In Distributed Multimedia Systems, World Scientific Publishing Co.

Course Code	Course Name	Load Distribution (LT P C)
DTCS-503	Network Management And Administration	4 0 0 4

Learning Outcomes:

1. Understand and handle the directory services of os and to have remote network access.
2. Understand different network and Transport layer protocols and printing concepts.
3. Understand and configure windows 2003 server and design a network.
4. Understand and configure a windows2012/ 2016 server with networking capabilities.
5. Understand security issues in a server and implement various security features.

Unit 1:

9 hours

Exploring Directory Services and Remote Network Access:

Network Related Jobs – Network Administrator, Network Engineer, Network Architecture / Designer, Other Network Related Jobs. Directory Services - Define Directory Services, Definition of Novelle 06Directory, Windows NT domains, Microsoft’s Active Directory, X500 Directory Access Protocol, Lightweight Directory Access Protocol, Forests, Trees, Roots and Leaves. Active Directory Architecture – Object Types, Object Naming, Canonical Names, LDAP Notation, Globally unique identifiers, User Principle Names, Domain, Trees & Forests. Remote Network Access – Need of Remote Network Access, Public Switched Telephone Network, Integrated Services Digital Network, Digital Subscriber Line, CATV. Virtual Private Network – VPN Protocols, Types of VPNs, VPN Clients, SSL VPNs.

Unit 2:

10 hours

Network Connection and Printing Services:

Dynamic Host Configuration Protocol (DHCP) – DHCP Origins, Reverse Address Resolution Protocol (RARP), The Bootstrap Protocol (BOOTP), DHCP Objectives, IP Address Assignment, DHCP Architecture. Introduction to Domain Name System(DNS) - DNS Objectives, Domain Naming, Top Level Domains, Second Level Domains, Sub domains, DNS Functions, Resource Records, DNS Name Resolution, Resolves, DNS Requests, Root Name Servers, Resolving a Domain Name, DNS Name Registration. Understand Network Printing Concepts - Understand Network Printing Concepts, Locally connected print devices, Setting up local print devices, Shared print devices, Sharing Locally Attached Print Devices, Describe Windows Network Printing, Add Print Wizard.

Unit 3:

Implementation of Network:

Designing Network – Accessing Network Needs, Applications, Users, Network Services, Security and Safety, Growth and Capacity Planning, Meeting Network Needs – Choosing Network Type, Choosing Network Structure, Choosing Servers. Installing and Configuring Windows 2003 Server - Preparing for Installation, Creating windows 2003 server boot disk, Installing windows 2003 server, Configuring server/ client, Setting windows 2003 server - Creating Domain controller, Adding the DHCP and WINS roles, Adding file server and print server, Adding Web based Administration.

Unit 4:

Administering Windows 2012/16 Server (The Basics)

Working With User Accounts - Adding a User, Modifying User Account, Deleting or Disabling a User Account, Working With Windows 2012/16 Security Groups – Creating Group, Maintaining Group Membership. Working with Shares – Understanding Share Security, Creating Shares, Mapping Drives, Administering Printer Shares – Setting up Network Printer, Working with Windows 2012/16 Backup – Using Windows 2012/16 Servers Backup Software.

Unit 5:**Troubleshooting and security of Network:**

Understanding the Problem – Troubleshooting, Segmenting the Problem, Isolating the Problem, Setting Priorities. Troubleshooting Tools – Hardware Tools, Software Tools, Monitoring and Troubleshooting Tools, Internal Security – Account Security, File and Directory permissions, Practices and user education. External Threats – Front Door threats, Back Door threats, Denial services threats, Viruses, worms and other Malicious codes.

Text Books:

1. Bruce Hallberg, Networking A Beginner's Guide, Tata McGraw-Hill Edition.
2. Networking Essential Plus, MCSE Training Kit, Microsoft Press.

Course Code	Course Name	Load Distribution (LT P C)
DTCS-504	Operating System	3 0 0 3

Unit 1: 8 hours

Introduction:

Operating system, Evolution, Generations –1st, 2nd, 3rd, 4th. Mainframe Systems – Batch, Multi programmed, Multitasking, Time sharing, Desktop. Multiprocessor Systems, Distributed Systems, Clustered Systems, Real Time Systems.

Unit 2: 8 hours

Operating System Structures:

System components - Process management, Main memory,management, File management, I/O system management, Secondary storage management. Operating system services. System calls – Uses, process control, file management, Device management, Information maintenance, communication. Operating system structure. Simple structure, layered, monolithic, microkernel, Booting.

Unit 3: 9 hours

Process Management:

Processes - Concept, process, state, process,control block. Process scheduling - Scheduling queues, scheduler, context switch. Operations on processes - creation, termination. Inter process communication.

Threads - Benefits, user and kernel threads. Multithreading Models - Many to one, one to one, many to many.

Unit 4: 9 hours

Scheduling:

Scheduling –Objectives, concept, criteria, CPU and I/O burst cycle. Types of Scheduling: Preemptive, Non preemptive. Scheduling Algorithms: First come first served (FCFS), Shortest job first (SJF), Round Robin (RR), Priority. Other Scheduling. Multilevel, Multiprocessor, real-time. Deadlock. System model, principle necessary conditions, mutual exclusion, critical region. Deadlock handling. Prevention and avoidance.

Unit 5: 9 hours

File System and Memory Management:

File- Concept, Attributes, Operations, Types, Structure. Access Methods – Sequential, Direct. Swapping

Allocation Methods – Contiguous, Linked, Indexed. Directory Structure – Single level, Two level, Tree Structure. Protection –Types of accesses, Access control. Basic Memory Management – Partitioning,Fixed & Variable. Free Space management techniques –Bitmap ,Linked List.Virtual Memory – Concept ,Paging,Page fault ,Page Table. Page Replacement algorithms – FIFO(First in First out) ,Optimal Page replacement, LRU (Least recently used),NRU (Not recently used).

Text Books:

1. Silberschatz Galvin, Gagne, Operating System Concepts,John Wiley & Sons (Asia) Pte ltd.
2. Andrew S. Tanenbaum, Modern Operating Systems, Prentice Hall of India.

Reference Books:

1. Sumitabha Das, Unix Concepts and Applications, Tata McGraw-Hill.

Course Code	Course Name	Load Distribution (LT P C)
DTCS-505	Java Programming	3 0 0 3

UNIT-I

8 Hours

Introduction to java: Fundamentals of Object Oriented Programming, Object and Classes, Features of java. Constant, Variables and Data Types, Scope of variable, Symbolic Constant, Type casting, Standard default values. **Operators:** Arithmetic Operators, Relational Operators, Logical Operators, Assignment Operator Increment and Decrement Operator, Conditional Operator, Bit wise Operator, Special Operator **Decision making and Branching:** Decision making with if statement, Simple if statement, The if else statement, The else if ladder, The switch statement, The? : Operator **Decision making and Looping:** The While statement, The do statement, The for statement, Jumps in Loops, Labeled Loops.

UNIT-II

9 Hours

Classes, Object and Methods: Defining a class, Creating object, Accessing class members, Constructor, Methods Overloading, Static Member. **Inheritance:** Extending a Class (Defining a subclass Constructor), Multilevel inheritance, Hierarchical inheritance, Overriding Methods, Final variable and Methods, Final Classes, Abstract method and Classes. **Visibility Control:** Public access, default access, Private access, Protected access. **Array, Strings and Vectors:** Arrays, One Dimensional array, Creating an array, Two Dimensional array, Strings, Vectors, Wrapper Classes

UNIT-III

8 Hours

Interfaces and Packages: Interface: Multiple Inheritance, Defining interfaces, Extending interfaces, Implementing interfaces, Accessing Interface variable. Packages: Putting Classes Together, System Package, Using system Package, Naming Convention, Creating Package, Accessing a package, Using a package, adding a class to a package

UNIT-IV

8 Hours

Multithreaded Programming and Exception handling

Multi Threading: Creating Thread, Extending a thread class, Stopping and Blocking a thread, Life cycle of thread, Using thread method, Thread exceptions, Thread priority, Synchronization, Implementing a 'Runnable' Interface. **Managing Errors and Exceptions:** Types of errors, Exception, Multiple catch statement, using finally statement, Using Exception for Debugging

UNIT-V

9 Hours

Graphics Libraries and File I/O: AWT classes and interfaces, window and container concepts. Design elements (buttons, labels, fields, frame, panels), anonymous classes and inner classes in java. Events and event handlers. Layouts and Layout Managers.

Text Books:

1. Balgurusamy, "Programming with java , a primer", Tata McGraw Hill.

Reference Books:

1. Herbert Schildt, "Java: The complete reference", 9 th Edition, Tata McGraw Hill.
2. Cay S. Horstmann, "Core Java - Vol. I – Fundamentals", Tenth edition, Prentice Hall.