(55025) PRINCIPLES OF PROGRAMMING LANGUAGES

UNIT I

UNIT II
Syntax and Semantics: general Problem of describing Syntax and Semantics, formal methods of describing syntax - BNF, EBNF for common programming languages features, parse trees, ambiguous grammars, attribute grammars, denotational semantics and axiomatic semantics for common programming language features.

UNIT III
Data types: Introduction, primitive, character, user defined, array, associative, record, union, pointer and reference types, design and implementation uses related to these types. Names, Variable, concept of binding, type checking, strong typing, type compatibility, named constants, variable initialization.

UNIT IV
Expressions and Statements: Arithmetic relational and Boolean expressions, Short circuit evaluation mixed mode assignment, Assignment Statements, Control Structures – Statement Level, Compound Statements, Selection, Iteration, Unconditional Statements, guarded commands.

UNIT V
Subprograms and Blocks: Fundamentals of sub-programs, Scope and lifetime of variable, static and dynamic scope, Design issues of subprograms and operations, local referencing environments, parameter passing methods, overloaded sub-programs, generic sub-programs, parameters that are sub-program names, design issues for functions user defined overloaded operators, co routines.
UNIT VI
Abstract Data types: Abstractions and encapsulation, introductions to data abstraction, design issues, language examples, C++ parameterized ADT, object oriented programming in small talk, C++, Java, C#, Ada 95
Concurrency: Subprogram level concurrency, semaphores, monitors, massage passing, Java threads, C# threads.

UNIT VII
Exception handling: Exceptions, exception Propagation, Exception handler in Ada, C++ and Java.
Logic Programming Language: Introduction and overview of logic programming, basic elements of prolog, application of logic programming.

UNIT VIII
Functional Programming Languages: Introduction, fundamentals of FPL, LISP, ML, Haskell, application of Functional Programming Languages and comparison of functional and imperative Languages.

TEXT BOOKS:

REFERENCE BOOKS:
3. LISP, Patric Henry Winston and Paul Horn, Pearson Education.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY
HYDERABAD

III Year B.Tech. CSE - I Sem
L T/P/D C
3 1/-/- 3

(55026) OPERATIONS RESEARCH
(OPEN ELECTIVE)

UNIT I

UNIT II

UNIT III

UNIT IV
Sequencing models. Solution of Sequencing Problem – Processing n Jobs through 2 Machines – Processing n Jobs through 3 Machines – Processing 2 Jobs through m machines – Processing n Jobs through m Machines.

UNIT V

UNIT VI
UNIT VII
Replacement Models. Replacement of items that deteriorate whose maintenance costs increase with time without change in the money value. Replacement of items that fail suddenly: individual replacement policy, group replacement policy.

UNIT VIII
Inventory models. Inventory costs. Models with deterministic demand — model (a) demand rate uniform and production rate infinite, model (b) demand rate non-uniform and production rate infinite, model (c) demand rate uniform and production rate finite.

TEXT BOOKS:

REFERENCE BOOKS:
Copyright Law


UNIT-V:

Copyright Ownership, Transfers, Duration, Registration, and Searching Copyright Ownership Issues – Joint works – Ownership in Derivative works – Works Made for hire – Transfers of Copyright – Termination of Transfers of Copyright – Duration of Copyright. Copyright Registration Application – Deposit Materials – Application Process and Registration of Copyright – Searching Copyright Office Records – Obtaining Copyright Office Records and Deposit Materials – Copyright Notice.

UNIT-VI:

Copyright Infringement, New Developments in Copyright Law, Semiconductor Chip Protection Act

UNIT-VII:


UNIT-VIII:

Patent Infringement, New Developments and International Patent Law

TEXT BOOK:


REFERENCES:

UNIT IV

Computer Forensics analysis and validation: Determining what data to collect and analyze, validating forensic data, addressing data-hiding techniques, performing remote acquisitions

Network Forensics: Network forensics overview, performing live acquisitions, developing standard procedures for network forensics, using network tools, examining the honeynet project.

UNIT V

Processing Crime and Incident Scenes: Identifying digital evidence, collecting evidence in private-sector incident scenes, processing law enforcement crime scenes, preparing for a search, securing a computer incident or crime scene, seizing digital evidence at the scene, storing digital evidence, obtaining a digital hash, reviewing a case

UNIT VI

Current Computer Forensic tools: evaluating computer forensic tool needs, computer forensics software tools, computer forensics hardware tools, validating and testing forensics software

UNIT VII

E-Mail Investigations: Exploring the role of e-mail in investigation, exploring the roles of the client and server in e-mail, investigating e-mail crimes and violations, understanding e-mail servers, using specialized e-mail forensic tools

Cell phone and mobile device forensics: Understanding mobile device forensics, understanding acquisition procedures for cell phones and mobile devices.

UNIT VIII

Working with Windows and DOS Systems: understanding file systems, exploring Microsoft File Structures, Examining NTFS disks, Understanding whole disk encryption, windows registry, Microsoft startup tasks, MS-DOS startup tasks, virtual machines.
TEXT BOOK:

REFERENCE BOOKS:
6. Windows Forensics by Chad Steel, Wiley India Edition.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY
HYDERABAD

III Year B.Tech. CSE - I Sem
L T/P/D C
3 1/-/- 3

(55029) SOFTWARE ENGINEERING

UNIT I

UNIT II
Process models: The waterfall model, Incremental process models, Evolutionary process models, Specialized process models, The Unified process.
Software Requirements: Functional and non-functional requirements, User requirements, System requirements, Interface specification, the software requirements document.

UNIT III
Requirements engineering process: Feasibility studies, Requirements elicitation and analysis, Requirements validation, Requirements management.
System models: Context Models, Behavioral models, Data models, Object models, structured methods.

UNIT IV
Design Engineering: Design process and Design quality, Design concepts, the design model, pattern based software design.
Creating an architectural design: software architecture, Data design, Architectural styles and patterns, Architectural Design, assessing alternative architectural designs, mapping data flow into a software architecture.
UNIT V
Modeling component-level design: Designing class-based components, conducting component-level design.
Object constraint language, designing conventional components.
Performing User interface design: Golden rules, User interface analysis and design, interface analysis, interface design steps, Design evaluation.

UNIT VI
Testing Strategies: A strategic approach to software testing, test strategies for conventional software, Black-Box and White-Box testing, Validation testing, System testing, the art of Debugging.
Product metrics: Software Quality, Framework for Product metrics, Metrics for Analysis Model, Metrics for Design Model, Metrics for source code, Metrics for testing, Metrics for maintenance.

UNIT VII
Risk management: Reactive vs Proactive Risk strategies, software risks, Risk identification, Risk projection, Risk refinement, RMMM, RMMM Plan.

UNIT VIII

TEXT BOOKS:

REFERENCE BOOKS:
3. Fundamentals of Software Engineering, Rajib Mall, PHI, 2005
10. Introduction to Software Engineering, R.J. Leach, CRC Press.
JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY
HYDERABAD

III Year B.Tech, CSE - I Sem

(55030) MICROPROCESSORS AND INTERFACING

UNIT-I:
8 bit/16 bit Microprocessors:
An overview of 8085, Architecture of 8086 Microprocessor, Special functions
of General purpose registers. 8086 flag register and function of 8086 Flags.
Addressing modes of 8086, Instruction set of 8086. Assembler directives,
simple programs, procedures, and macros

UNIT-II:
Assembly level programming:
Assembly language programs involving logical, Branch & Call instructions,
sorting, evaluation of arithmetic expressions, string manipulation

UNIT-III:
Modes of operation in 8086:
Pin diagram of 8086-Minimum mode and maximum mode of operation, Timing
diagram. Memory interfacing to 8086 (Static RAM & EPROM). Need for
DMA, DMA data transfer Method, Interfacing with 8237/8257.

UNIT-IV:
I/O Interface:
8255 PPI – various modes of operation and interfacing to 8086, Interfacing
Keyboard, Displays, Stepper Motor and actuators, D/A and A/D converter
interfacing.

UNIT-V:
Interrupt Control:
Interrupt structure of 8086. Vector interrupt table. Interrupt service routines.
Introduction to DOS and BIOS interrupts. 8259 PIC Architecture and
interfacing cascading of interrupt controller and its importance.

UNIT-VI:
Serial Communication control:
Serial data transfer schemes. Asynchronous and Synchronous data transfer
schemes. 8251 USART architecture and interfacing, TTL to RS 232C and
RS232C to TTL conversion, Sample program of serial data transfer, IEEE 488
GPIB

UNIT-VII:
Introduction to Microcontrollers:
Overview of 8051 microcontroller, Architecture, I/O Ports, Memory
organization, addressing modes and instruction set of 8051, simple programs

UNIT-VIII:
Real time control:
Timer/Counter operation in 8051, Serial Communication control in 8051,
Interrupt structure of 8051, Memory and I/O interfacing of 8051

TEXT BOOKS:
1. Advanced microprocessor and Peripherals - A.K.Ray and

REFERENCES:
2. The 8088 and 8086 Micro Processors: Programming, Interfacing,
   Software, Hardware and Applications – Walter. A. Triebel, Avatar
3. Micro Computer System 8086/8088 Family Architecture, Programming
   and Design - By Liu and GA Gibson, PHI, 2nd Ed.
Operating Systems Overview - Operating systems functions, Overview of computer operating systems, protection and security, distributed systems, special purpose systems, operating systems structures-operating system services and systems calls, system programs, operating system structure, operating systems generation.

UNIT - III
Concurrency - Process synchronization, the critical-section problem, Peterson's Solution, synchronization Hardware, semaphores, classic problems of synchronization, monitors, Synchronization examples, atomic transactions. Case studies UNIX, Linux, Windows

UNIT - IV
Memory Management - Swapping, contiguous memory allocation, paging, structure of the page table, segmentation, virtual memory, demand paging, page-replacement algorithms, Allocation of frames, Thrashing case studies UNIX, Linux, Windows

UNIT - V
Principles of deadlock - system model, deadlock characterization, deadlock prevention, detection and avoidance, recovery form deadlock.

UNIT - VI
File system Interface- the concept of a file, Access Methods, Directory structure, File system mounting, file sharing, protection. File System implementation- File system structure, file system implementation, directory implementation, allocation methods, free-space management.

UNIT - VII

UNIT - VIII

TEXT BOOKS:

REFERENCES:
5. An Introduction to Operating Systems, P.C.P. Bhatt, PHI.
Devices, Backbone Networks, Virtual LANs, Cellular Telephony, Satellite Networks, SONET/SDH, Architecture, SONET Layers, SONET Frames, STS Multiplexing, SONET Networks, Virtual Tributaries, Virtual-Circuit Networks: Frame Relay and ATM, Frame Relay, ATM, ATM LANs

UNIT - V

UNIT - VI

UNIT - VII
Application Layer: Domain Name System, Name Space, Domain Name Space, Distribution of Name Space, DNS in the Internet, Resolution, DNS Messages, Types of Records, Registrars, Dynamic Domain Name System (DDNS), Encapsulation, Remote Logging, Electronic Mail and File Transfer, Remote Logging, Telnet, Electronic Mail, File Transfer

UNIT - VIII
TEXT BOOKS:
1. Data Communications and Networking, Fourth Edition by Behrouza A. Forouzan, TMH.

REFERENCE BOOKS:
1. Introduction to Data communications and Networking, W. Tomasi, Pearson Education.
7. Data communications and computer Networks, P.C. Gupta, PHI.

(55608) MICROPROCESSORS AND INTERFACING LAB
Minimum of 12 experiments are to be conducted.
1. Write and execute an Assembly language Program (ALP) to 8086 processor to add, subtract and multiply two 16 bit unsigned numbers. Store the result in extra segment.
2. Write and execute an Assembly language Program (ALP) to 8086 processor to divide a 32 bit unsigned number by a 16 bit unsigned number. Store the result in stack segment.
3. Write and execute an Assembly language Program (ALP) to 8086 processor to sort the given array of 32 bit numbers in ascending and descending order.
4. Write and execute an Assembly language Program (ALP) to 8086 processor to pick the median from the given array of numbers.
5. Write and execute an Assembly language Program (ALP) to 8086 processor to find the length of a given string which terminates with a special character.
6. Write and execute an Assembly language Program (ALP) to 8086 processor to reverse the given string and verify whether it is a palindrome.
7. Write and execute an Assembly language Program (ALP) to 8086 processor to verify the password.
8. Write and execute an Assembly language Program (ALP) to 8086 processor to insert or delete a character/number from the given string.
9. Write and execute an Assembly language Program (ALP) to 8086 processor to call a delay subroutine and display the character on the LED display.
10. Interface a keypad to 8086 microprocessor and display the key number pressed on the 7-segment display which is also interfaced to 8086.

11. Write an interrupt service routine to 8086 when ever there is an interrupt request on interrupt pin, which displays “hello” on a LCD.

12. Interface an 8086 microprocessor trainer kit to PC and establish a communication between them through RS 232.

13. Interface DMA controller to 8086 and transfer bulk data from memory to I/O device.


15. Interface an 8 bit ADC to 8086 and generate digital output and store it in memory for the given square/ramp/triangle wave form inputs.

16. Interface an ADC to 8086 and generate step, ramp, triangle and square waveforms with different periods.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY
HYDERABAD

III Year B.Tech. CSE - I Sem

Objective:
- To understand the functionalities of various layers of OSI model
- To understand the operating System functionalities

System/Software Requirement
- Intel based desktop PCs LAN CONNECTED with minimum of 166 MHZ or faster processor with atleast 64 MB RAM and 100 MB free disk space

Part - A
1. Implement the data link layer framing methods such as character, character stuffing and bit stuffing.

2. Implement on a data set of characters the three CRC polynomials – CRC 12, CRC 16 and CRC CCIP.

3. Implement Dijkstra’s algorithm to compute the Shortest path thru a graph.

4. Take an example subnet graph with weights indicating delay between nodes. Now obtain Routing table art each node using distance vector routing algorithm.

5. Take an example subnet of hosts. Obtain broadcast tree for it.

6. Take a 64 bit playing text and encrypt the same using DES algorithm.

7. Write a program to break the above DES coding.

8. Using RSA algorithm Encrypt a text data and Decrypt the same.
Part-B

1. Simulate the following CPU scheduling algorithms
   a) Round Robin b) SJF c) FCFS d) Priority
2. Simulate all file allocation strategies
   a) Sequential b) Indexed c) Linked
3. Simulate MVT and MFT
4. Simulate all File Organization Techniques
   a) Single level directory b) Two level c) Hierarchical d) DAG
5. Simulate Bankers Algorithm for Dead Lock Avoidance
6. Simulate Bankers Algorithm for Dead Lock Prevention
7. Simulate all page replacement algorithms
   a) FIFO b) LRU c) LFU Etc. …
8. Simulate Paging Technique of memory management.