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B.TECH.V SEMESTER COMPUTER SCIENCE & ENGG.							
CS530	COURSE CONTENTS (UEC SCHEME)						
[redacted]	Distributed System	L	T	P	C	Max. Marks	Min. Marks
Duration	3 Hours	2	1	0	3	70	22

Course Description:

This course provides an introduction to the fundamentals of distributed computer systems, assuming the availability of facilities for data transmission. The structure of distributed systems using multiple levels of software is emphasized. Specific topics include: distributed algorithms, distributed file systems, distributed databases & security and protection.

Course Objectives:

- Understand the fundamentals of distributed computer systems, assuming the availability of facilities for data transmission.
- Understand the structure of distributed systems using multiple levels of software is emphasized.
- Understand the concept of e 4: Distributed Naming Q Module 5: Distributed File Systems ,Synchronization ,Data Replication ,Fault Tolerance , Security
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Unit-I

Introduction to distributed systems:

Architecture for Distributed System, Goals of Distributed system, Hardware and Software concepts, Distributed Computing Model, Advantages & Disadvantage distributed system, Issues in designing Distributed System,

Unit-II

Distributed Share Memory And Distributed File System:

Basic Concept of Distributed Share Memory (DSM), DSM Architecture & its Types, Design & Implementations issues In DSM System, Structure of Share Memory Space, Consistency Model, and Thrashing. Desirable features of good Distributed File System, File Model, File Service Architecture, File Accessing Model, File Sharing Semantics, File Catching Scheme, File Application & Fault tolerance. Naming: - Features, System Oriented Names, Object Locating Mechanism, Human Oriented Name.

Unit-III

Inter Process Communication And Synchronization:

API for Internet Protocol, Data Representation & Marshaling, Group Communication, Client Server Communication, RPC- Implementing RPC Mechanism, Stub Generation, RPC Messages. Synchronization: - Clock Synchronization, Mutual Exclusion, Election Algorithms:- Bully & Ring Algorithms.

Unit-IV

Distributed Scheduling and Deadlock:

Distributed Scheduling-Issues in Load Distributing, Components for Load Distributing Algorithms, Different Types of Load Distributing Algorithms, Task Migration and its issues. Deadlock-Issues in deadlock detection & Resolutions, Deadlock Handling Strategy, Distributed Deadlock Algorithms.

Unit-V

Distributed Multimedia & Database system:

Distributed Data Base Management System (DDBMS), Types of Distributed Database, Distributed Multimedia:- Characteristics of multimedia Data, Quality of Service Managements. Case Study of Distributed System:- Amoeba, Mach, Chorus

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CS5303	COURSE CONTENTS (UEC SCHEME)						
~~CS-5008~~	Theory of Computation	L	T	P	C	Max. Marks	Min. Marks
Duration	3 Hours	2	1	0	3	70	22

Course Description:

The course introduces fundamental concepts in automata theory including grammar, finite automaton, regular expression, formal language, pushdown automaton, and Turing machine. Not only they form basic models of computation, they are also the foundation of many branches of computer science, e.g. compilers, software engineering, concurrent systems, etc. The properties of these models will be studied and various rigorous techniques for analyzing and comparing them will be discussed, by using both formalism and examples.

Course Objective

- To understand the basic properties of formal languages and formal grammars.
- Understanding how to construct finite state machines and the equivalent regular expressions.
- To learn writing context free grammar and designing acceptors for various context free languages.
- Construction of Turing machines and Post machines and also to prove the equivalence of languages described by these machines.
- To understand the concepts of tractability and decidability.

Syllabus

Unit I:

Introduction: Strings and Languages, automata: Basic computation model, Set properties, Introduction of Finite automata, Finite State Machine, Transition graph, Transition matrix, Deterministic and non-deterministic FSM'S, Regular Sets and Regular Grammars: Alphabet, words, Operations, Regular sets.

Unit-II:

Finite Automata and Regular expression: Equivalence of DFA and NDFA, Mealy & Moore machines, minimization of finite automata, Two-way finite automata, Regular expression and regular sets, Pumping lemma Application of pumping lemma, closure properties of regular sets.

Unit-III: Context Free Languages:

Context –Free Grammars: Introduction to CFG, Parsing, Derivations, Derivation trees and Ambiguity, Simplification of Context free grammars, Normal Forms (Chomsky Normal Form and Greibach Normal forms), Defining CFG.

Unit-IV:

Pushdown Automata: Definition of PDA, Deterministic Pushdown Automata, PDA corresponding to given CFG, CFG corresponding to a given PDA. **Context Free Languages:** The pumping lemma for CFL's, Closure properties of CFL's, Decision problems involving CFL's. Introduction of Context sensitive language.

Unit V:

Turing Machine and Computability: Introduction of TM model, representation and Design of TM, Universal TM & Other modification, Church's hypothesis. Properties of recursive & recursively enumerable languages. Undecidability, Tractable and Untractable Problems, P & NP class problems. Few examples of these problems.

Course Outcomes:

At the end of the course, the student would be able to:-

- Understand the basic model of computation.
- Implement and validate the finite automata for a set of language.
- Design various formal languages and also categorize them.
- Design acceptors for various types of formal languages.
- Identify the decidable and undecidable problems.

References books:

1. John E. Hopcroft, Jeffery Ullman,"Introduction to Automata theory, Langauges & computation", Narosa Publishers.
2. K.L.P Mishra & N.Chandrasekaran,"Theory of Computer Science", PHI Learning
3. Michael Sipser,"Theory of Computation",Cenage Learning
4. John C Martin, "Introdution to languages and theory of computation", McGraw Hill
5. Daniel I.A. Cohen,"Introduction to Computer Theory",Wiley India.
6. Kohavi,"Switching & Finite Automata Theory",TMH

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B.TECH. V SEMESTER COMPUTER SCIENCE &ENGG.							
CS5304 COURSE CONTENTS (UEC SCHEME)							
~~CS5004~~	**Software Engineering and Project Management**	**L**	**T**	**P**	**C**	**Max. Marks**	**Min. Marks**
Duration	5 Hours	2	1	2	4	70	22

Course Description:
Students will learn the concepts of Software Engineering. The course emphasizes on Project development from starting to the deployment of the product. The process includes different phases and different life cycle according to need of the project.

Course Objectives:

- To introduce the fundamental concepts of software engineering.
- To build an understanding on various phases of software development.
- To introduce various software process models.
- To Learn about finding debugging and error of the project.
- To learn about full development and maintenance of any software project.

Syllabus

UNIT:1

Introduction to software engineering- scope of software engineering – historical aspects, economic aspects, maintenance aspects, specification and design aspects, team programming aspects. Software engineering a layered technology – processes, methods and tools. Software process models – prototyping models, incremental models, spiral model, waterfall model.

UNIT:2

Process Framework Models: Capability maturity model (CMM), ISO 9000. Phases in Software development – requirement analysis- requirements elicitation for software, analysis principles, software prototyping, specification.

UNIT:3

Planning phase – project planning objective, software scope, empirical estimation models- COCOMO, single variable model, staffing and personal planning. Design phase – design process, principles, concepts, effective modular design, top down, bottom up strategies, stepwise refinement.

UNIT:4

Coding – programming practice, verification, size measures, complexity analysis, coding standards. Testing – fundamentals, white box testing, control structure testing, black box testing, basis path testing, code walk-throughs and inspection, testing strategies-Issues, Unit testing, integration testing, Validation testing, System testing

UNIT:5

Maintenance-Overview of maintenance process, types of maintenance. Risk management: software risks - risk identification-risk monitoring and management. **Project Management concept:** People – Product-Process-Project. Project scheduling and tracking.

B. TECH. V SEMESTER COMPUTER SCIENCE & ENGG.							
COURSE CONTENTS (UEC SCHEME)							
CS5305	Computer Network	L	T	P	C	Max. Marks	Min. Marks
Duration	3 Hours	2	1	2	4	70	22

Course Description:
This course covers computer networks concepts, internet, data link layer, network layer and routing, transport layer protocols, application layer protocols and some concepts of network security.

Course Objective

1. Build an understanding of the fundamental concepts of computer networking.
2. Familiarize the student with the basic taxonomy and terminology of the computer networking area.
3. Introduce the student to advanced networking concepts, preparing the student for entry Advanced Courses in computer networking.
4. Allow the student to gain expertise in some specific areas of networking such as the design and maintenance of individual networks.

Syllabus

Unit I:
Definition and goals, Design issues, Network architecture-broadcast & point to point, Models-OSI reference & TCP/IP and their comparative study, Network classification-LAN, WAN & MAN, protocols & services, types of service-connection oriented and connectionless, different protocols.
Transmission Media: Twisted Pair, Coaxial cable, Fiber optic cable, Wireless transmission, telephone system, multiplexing, switching-circuit, packet & message switching, Virtual circuit switch.
Network devices-repeater, bridge, router, gateways, network interface cards, cabling system.

Unit-II:
Framing, Error control-Bit Error, causes of error, control methods, Flow control: Stop & wait, sliding window concept, piggybacking. Local Area Network Technology: Protocols- Aloha, CSMA, CSMA/CD, Collision free protocols, IEEE 802 protocols, standard- topologies, cabling system, Network management, MAC addressing frame format, Ethernet.

Unit-III:
Introduction, features & design issues, Routing- different routing algorithms, congestion control, Internetworking- Concepts and architecture. Addressing-IP Addressing and subnet masking, IP protocols, Network Address Translation, Address resolution protocol (ARP).

Unit-IV:
Introduction, design issues, Transport layer addressing, buffering, multiplexing, recovery, TCP/IP suite of protocols- TCP & UDP Network applications, Connection establishment, Connection release, TCP Header.

Unit V:
Introduction to application layer, Application layer protocols: Electronic mail, File transfer, remote login, WWW, Multimedia etc., Firewalls.

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B.TECH. V SEMESTER COMPUTER SCIENCE &ENGG.							
EC5351 COURSE CONTENTS (UEC SCHEME)							
[illegible]	Microprocessor and Interfacing	L	T	P	C	Max. Marks	Min. Marks
Duration	5 Hours	2	1	2	4	70	22

Course Description:

Students will learn the concepts and techniques used in microprocessor and interfacing. Microprocessor and interfacing course emphasizes on 8086 microprocessor, assembly language programming, 8051 microcontroller and memory unit.

Course Objective:

- To develop an understanding of the 8086 microprocessor.
- To explain concepts of assembly language programming.
- To Interface 8086 microprocessors with supporting chips.
- To develop an understanding of the 8051microcontroller.
- Describe the difference between microprocessor and microcontroller.

Syllabus

Unit I:

Microprocessor Introduction: Introduction to microprocessors, Evolution of microprocessor, Types of microprocessor, microprocessor architecture and its operation,**MemoryUnit**RAM, SRAM,DRAM,ROM,PROM,EPROM,EEPROM, Nonvolatile RAM.

Unit II:

8086 Microprocessor: Architecture of 8086 microprocessor, Register Organization and memory segmentation of 8086 microprocessor, Addressing modes of 8086 microprocessor , Flag registers of 8086 microprocessor, Pin configuration and signal description in maximum and minimum modes of 8086 microprocessor, Features and applications of advance microprocessors.

Unit III:

8086 Assembly Language Programming: Assembly language programs of 8086 microprocessor with examples, 8086 Interrupt, Introduction to 80186,80286,80386,80486 and Pentium microprocessor system.

Unit IV:

8254 Programmable Interval Timer: Features, Description, Programming examplesand interfacing with 8086 microprocessor,8259A Programmable Interrupt Controller, DMA Controller 8257,8279 Programmable Keyboard and Display I/O Interface,Compare Microprocessor and Microcontroller.

Unit V:

8051 Microcontroller: Architecture of 8051 microcontroller, Pin configuration of 8051 microcontroller, Addressing modes 8051Microcontroller,, memory organization, Timers/Counters, Interrupts 8051Microcontroller,8051 Assembly Language Programs with examples, Features and applications of microcontroller.

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Course Outcomes:

- To understand the Architecture and memory segmentation of 8086 microprocessor.
- Describe the features of 8086 microprocessor.