

B. N. Mandal University, Laloongar, Madhepura

Details of theory & Sessional Papers code of 3rd Year B. Tech. Course

BRANCH: COMPUTER SCIENCE & ENGINEERING

Subject	Subject Code	Branch Code	L	T	P	Th. Ext.	Th. Int.	Sessional
Microprocessor & Its Applications	μP	CS-301	2	1	3	70	30	Microprocessor & Its Applications-50
Design Analysis of Algorithms	DAA	CS-302	2	1	3	70	30	Design Analysis of Algorithm-50
Operating System	OS	CS-303	2	1	3	70	30	Operating system-50
Database management system	DBMS	CS-304	2	1	3	70	30	Data base management system-50
Computer networks	CN	CS-305	3	1	0	70	30	Computer networks-50
Web Technology	WT	CS-306	2	1	3	70	30	Web technology-50
Software engineering	SE	CS-307	3	1	0	70	30	Software engineering-50
Formal language & Automata theory	FLAT	CS-308	2	1	0	70	30	-----X
Minor project	MP	CS-309	0	0	3	---	---	Minor project -50

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Subject: Microprocessor & its Applications

Branch Code: CS-301 (ECE/CSE/EE)

T-P: 2-1-3

1st Term

Intel 8085

1. Introduction: CPU, register, memory, buses, memory addressing capacity of a CPU. Lecture:3
2. CPU Architecture: Pin configuration, instructions, addressing modes, instruction word size. Lecture:4
3. Timing diagram: Read cycle, write cycle, fetch cycle, memory read, memory write, I/O cycle languages. Lecture:4
4. Programming: Simple programming: 8-bit addition & subtraction, 16-bit addition, delay subroutine using register, finding lowest and highest no. in data array. Lecture:5
5. Data transfer schemes, I/O port. Lecture:6

2nd Term

6. 8255, 8251, 8253, 8257 chips, pin diagram, function of different modes. Lecture:7
7. Interfacing of ADC, analog multiplexer, simple and hold. Lecture:4

Intel 8086

8. Architecture: BIU and execution unit, pin diagram, function of different modes. Lecture:7
9. Addressing modes: Instruction. Lecture:4
10. Programming. Lecture:4

Text books:

1. Fundamental of Microprocessor & microcontroller by B Ram, Dhanpat Rai.
2. Advance Microprocessor by B Ram.

Reference books:

1. Microprocessor and interfacing by D V Hall, TMH.
2. Microprocessor Architecture by R S Gaonkar.
3. Microprocessor with application in process control by S I Ahson, TMH.
4. Programming Microprocessor interfaces by Michael Andrews, PHI.
5. The intel Microprocessor Architecture, programming and interfacing by B Brey, PHI.

Microprocessor Lab:

1. Different programs related to 8085 & 8086.
2. Application of different interfaces.

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DESIGN AND ANALYSIS OF ALGORITHMS

BRANCH CODE -CS--302
FIRST TERM

L-T-P : 2-1-3

1. Introduction : Algorithm , performance evaluation of algorithm space & time complexity
notion Of optimality. Lecture : 10
2. Divide and Conquer : Finding the maximum and minimum -Quick Sort - Selection -
Strassen s matrix multiplication etc. Lecture : 08
3. Greedy Algorithm : Knapsack problem (Knapsack , Fractional Knapsack) activity selection
problem , Huffman's code , minimum spanning tree Kruskal's algorithm , prim's
algorithm , Dijkstra's algorithm , etc . Lecture : 16

SECOND TERM -

4. Dynamic Programming : Knapsack problem DP solution , Activity selection problem DP
solution. All pairs shortest paths , Travelling salesman problem. Lecture : 6
5. Randomized Algorithms and Amortized Analysis : Basics ideas of randomized algorithms
(Las vegas and and Monte Carlo types) , simple example (Randomized Quick sort and its
analysis , Min-cut algorithm and its analysis) Amortized analysis and its significance
(Illustration through example). Lecture : 8
6. Graph Algorithms : Breadth First search (BFS) , Depth first Search (DFS), Strongly
Connected Components . Euler Tour , Minimum Spanning Tree , Kruskal's algorithm .
Prim's algorithm , Single Source shortest path. Lecture : 8
Lecture : 8
7. Introduction to NP-completeness : Basic concept. Lecture : 6

Text Books :

1. Introduction to algorithm, 2e , by Thomas H.cormen, Charles E. leiserson, Ronald L.
Revest and Clifford Stein, PHI.
2. Beginning Alogrithms by Simen Harris , James Ross Wiley India
3. Fundamental os computer algorithms by E. Horowitz and S. Sahni. Gaigotia.
4. Algorithms by Richard Johansonbough and Marcus Schaefer , Pearson algorithm.

Reference Books :

1. The design and analysis of computer algorithm by A.V Aho, JE. Hopcroft and J.D ullman ,
pearson education.
2. Algorithm - introduction to Design & analysis by S.Basse , Pearson Education.

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3. Algorithm and Complexity by H.S. Wilf, PHI

DAA LAB

Practical in c programming with data structure with complexity

OPERATING SYSTEM

BRANCH CODE- CS-303

L-T-P: 2-1-3

FIRST TERM

1. Introduction: Introduction to operating system, operating system function, evaluation of O/S, different types of O/S, Batch multi programmed, time sharing, Real time, Distributed, Parallel. Lecture-05

2. Process: Concept of processes, Process scheduling, Operations on processes, Inter process communication, communication in client server-system, over view and benefit of threads. Lecture-05

3. Process Scheduling: Scheduling criteria, preemptive & non preemptive scheduling, scheduling algorithm. Lecture-05

4. Process Synchronization: Background, Critical section problem, critical region, synchronization hardware, classical problem of synchronization, semaphores Lecture-05.

5. deadlocks: System model deadlock characterization, methods of handling deadlocks, deadlocks prevention, deadlocks avoidance, deadlocks detection, recovery from deadlock. Lecture-05

SECOND TERM

6. Memory Management: Background, logical vs. physical address space, swapping contiguous memory allocation paging segmentation. Lecture-10

7. Virtual Memory: Background, demand paging, page replacement, page replacement algorithms, allocation of frames, thrashing. Lecture-05

8. File System: File concept, access methods, directory structure Lecture-05

9. Disk Management: Disk structure, disk scheduling (FCFS, SSTF, SCAN, C-SCAN) Lecture-05

Text Books:

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(1) Operating System Principle by Silberschatz a and Peterson J.L.Wiley.

(2) operating system by Dhamdhere, TMH

Reference Books:

(1) Operating System by Deutel & Choffnes.

(2) Operating System by Stalling ,Pearson

O.S LAB

Familiarization with UNIX/LINUX and Windows o/s

DATABASE MANAGEMENT SYSTEM

L-T-P:2-1-3

BRANCH CODE-CS-304

FIRST TERM

1. Introduction: Purpose of database system, view of data, data models, & interface, database language, transaction management ,storage management, Database administrator,, database user, overall system structure, classification of database management system, three schema architecture. **Lecture-08**
2. Data Modeling: E-r Model, Basic concept, design issues, mapping constraints ,keys ,E-R features, design of an database schema, reduction of an E-R Schema to tables. **Lecture-08**
3. Relational Model: Structure of relational database, relational algebra, tulip relational calculus, domain relational calculus, extended relational algebra operations, modification of the database and view ,SQL and other. **Lecture-06**
4. Relational Languages: Background ,basic structure, set operations, aggregate function, null values, nested sub queries, derived database, joined relations, DOL embedded SQL and features, query by example. **Lecture-9**

SECOND TERM

5. Integrity Constraints: Domain constraints, referential integrity, assertions, triggers and functional dependencies. **lecture-06**
6. Relational database design: Pitfalls in relational database design, decomposition, Normalization using functional, multi valued and join dependencies, domain key normal for and alternative approaches to database design. **Lecture-06**
6. Query Processing: Overview, catalog information for cost estimation, measures of query cost,selection operation, other operation, evaluation of expressions, query optimization.

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Lecture-8

- 7. transaction. Transaction concept, transaction state, system log, commit point, desirable properties of a transaction, concurrent executions, serializability, recoverability, implementation of isolation, transaction definition in SQL. Testing for serializability.

Lecture-8

Text Books:

1. Database System Concepts, 3rd edition by A.Silberchatz, H.F.Korth, & s.sudhatshan, Mcgraw Hill,
2. Fundametal of Database System by Eimasri, Navthe, Somayajulu, and Gupta, Pearson Education.
3. Introduction to Database Management system by ISRD Group, Tata Mcgraw Hill.
4. An Introduction to database system by C.J. Date, A.Kanana, S.Swamynathan, Pearson Education.

Refrence books:

1. Database management system by Rajesh Narang, PHI.
2. Database System by Rob Coronel, Galgotia Publication.

LAB:

1. Familiazation with Oracle 9i



COMPUTER NETWORK

L-T-P:2-1-3

BRANCH CODE-CS-305

FIRST TERM

1. Introduction: Network Hardware & Software, OSI Reference model, TCP/IP Model, Lecture-04
Comparison of the OSI & TCP/IP model.
2. The physical link layer: Guide transmission media, physical layer standard. Lecture-04.
3. The data link layer : Need for data link control, Service provided by the data layer, Frame design consideration, Flow control mechanism, data link error control, error control in stop-and-wait mechanism & sliding window mechanism, Sequence numbering, piggybacking acknowledgement, Data link management. Lecture-8
Lecture-03
4. MAC Protocols: Random Access Protocols-ALOHA.

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5. IEER 802.3 Ethernet: Contention access, CSMA/CD, physical topology of Ethernet
Ethernet repeater, types of Ethernet. Lecture-05

SECOND TERM

6. Bridges and layer-2 switches. LAN bridge, transparent bridges, spanning tree algorithm, source-routing bridge, route discovery in source routing, layer 2 Ethernet switches. Lecture-6

7. The network layer: network layer design issue, purpose of network layer, function of network layer. Lecture-5

8. Introduction of internet protocol: IPv4 Format, ICMP. Lecture-2

9. Routing Algorithms: static routing, dynamic routing, distance vector routing algorithm, routing information protocol, link state routing, OSPF routing protocol, interior and exterior protocol, border gateway protocol. Lecture-10

10. Introduction to transport layer: TCP & UDP. Lecture-01

11. Introduction to application layer: TCP/IP Application protocol. Lecture-01

Text Book:

1. Data communication & networking by Forouzan, Tata McGraw Hill.
2. Computer network, 4e, by Andrew s. Tenenbaum, Pearson Education/PHI.
3. Data communication and computer network, by Prakash C. Gupta, PHI.
4. Networking Ali-in-one desk Reference by Doug Lowe, wiley Dreamtech.

Reference Book:

1. Computer networking: A Top-down approach featuring the internet, 3e by James F.Kurose.
2. Computer network by Godbole, Tata McGraw Hill.
3. Computer networking, by standard H.Rowe, Marsha I.Schuh.

COMPUTER NETWORK LAB:

PRACTICAL BASED ON SYLLABUS

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WEB TECHNOLOGY

L-T-P:2-1-3

BRANCH CODE-CS-306

FIRST TERM

✓ 1. Web introduction: Domain name, IP Address concepts, world wide web. .
Lecture-08

✓ 2. HTML & CSS: Introduction of HTML, commands, formatting web page, font tag, links and listing, images and its mapping, frameset definition, cascading style sheet(CSS) . .
Lecture-06

✓ 3. Java script: Introduction, data type, variables, operators, array object, location object, history object, submit event and validation. .
Lecture-10

4. Dynamic Hypertext Markup Language (DHTML): Introduction to DHTML, Dragging and dropping data, working layer. .
Lecture-06

SECOND TERM

5. Java fundamental: Introduction to java, java and internet, data type, variables, .
Lecture-06

6. operators, strings, input and output, control flow, arra6...
Lecture-06

7. Graphics and applet programming in java: introduction to abstract windows toolkit(AWT) and swing, event handling, working with text input, choice component, menus, dialogue boxes, applets and developing applets with HTMO, JAR FILES, Exception handling,
lecture-14
lecture-06

8. Database Programming: JDBC API

Text Book:

1. HTML Black book by Steven Hoizner (Wiley India)(2)

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JAVA-How to program by Deitel & Deitel (Pearson)

Reference Book:

1. HTML, CSS, JAVA Script, Perl, Python & PHP (Web standard programming reference) (Wiley India)
2. JAVA-The complete reference, J2SE, 5/e by Schildt(TMh)
3. Web Programming by Bates, Wiely.
4. Core java TM Volume 1 & 2 by Cay S.Harstmann & Gray Cornell(Pearson)
5. Internet & WWW- How program by Deitel & Dietel (Pearson)
6. HTML & DHTML-The complete Reference by Powell(TMh)

Lab:

Works in windows environment, internet based on HTML, DHTML programming based on syllabus.

SOFTWARE ENGINEERING

L-T-P:2-1-3

Branch code-CS-307

FIRST TERM

1. Introduction: S/W Engineering Discipline-Evolution and Impact, program v/s s/w product, Emergence of s/e engineering. **Lecture: 4**
2. Software Life Cycle Models: Waterfall, prototyping, evolutionary, spiral model and their comprision. **Lecture: 4**
3. Software project management: Project manager responsibilities, project planning, project size estimation metrics project estimation, Techniques, COCOMO Model, staffing level estimation, scheduling, Organisation and team Structure staffing, risk management, s/w configuration management **Lecture: 6**
4. Requirement Analysis and Specification: Requirement gathering and analysis, SRS, formal system development technique, axiomatic and algebraic specification **Lecture: 4**
5. Software Design: overview, Cohesion and Coupling, s/w design approaches, Object Oriented vs function operated Design. **Lecture: 4**
6. Function Oriented s/w Design: SA/Sd methodology, structured analysis, DFDs, structured Design, Detailed design, Design Preview. **Lecture: 4**

SECOND TERM

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