

Deenbandhu Chhotu Ram University of Science & Technology, Murthal (Sonapat) SCHEME OF STUDIES & EXAMINATIONS B.Tech. 3rd YEAR (SEMESTER -V) COMPUTER SCIENCE AND ENGINEERING Credit Based Scheme w.e.f. 2014-15

Sr. No	Course No.	Course Title	Teaching Schedule			Marks of class work	Examination Marks		Total	Credit	Duration of Exam
			L	T	P		Theory	practical			
1.	CSE 301B	OPERATING SYSTEMS	3	1	-	25	75	-	100	4	3
2.	CSE 303B	COMPUTER GRAPHICS (Common with IT VI th sem)	3	1	-	25	75	-	100	4	3
3.	CSE 305B	COMPUTER NETWORKS (Common with IT)	3	1	-	25	75	-	100	4	3
4.	CSE 307B	ANALYSIS AND DESIGN OF ALGORITHMS (Common with IT)	3	1	-	25	75	-	100	4	3
5.	CSE 309B	THEORY OF AUTOMATA & COMPUTATION (Common with IT VI th sem)	3	1	-	25	75	-	100	4	3
6.	ECE 309B	MICROPROCESSOR AND INTERFACING (Common with BME, AEI & ECE)	3	1	-	25	75	-	100	4	3
7.	CSE 321B	OPERATING SYSTEMS LAB	-	-	2	20	-	30	50	1	3
8.	CSE 323B	COMPUTER GRAPHICS LAB (Common with IT VI th sem)	-	-	2	20	-	30	50	1	3
9.	CSE 325B	COMPUTER NETWORKS LAB (Common with IT)	--	--	2	20		30	50	1	3
10.	ECE 329B	MICROPROCESSOR AND INTERFACING LAB (Common with BME, AEI & ECE)	-	-	2	20	-	30	50	1	3
11.	CSE 327 B	PROFESSIONAL TRAINING -I	-	--	2	50			50	2	-
Total			18	6	10	280	450	120	850	30	

Note:

- 5888** Every student has to participate in the sports activities. Minimum one hour is fixed for sports activities either in the morning or evening. Weightage of Sports is given in General Proficiency and Ethics Syllabus.
- 5889** The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
- 5890** Electronics gadgets including Cellular phones are not allowed in the examination.
- 5891** Assessment of Professional Training-I, undergone at the end of IV semester, will be based on seminar, viva-voce, report and certificate of Professional Training obtained by the student from the industry , institute, research lab, training center etc

CSE 301B OPERATING SYSTEMS
B. Tech. Semester - V (Computer Science and Engg.)

L	T	P	Credits	Class Work	25
3	1	--	4	Examination	: Marks
				Total	75Mark
				Duration of	: s
				Examination	100
					: Marks
					: 3 Hours

Unit-I

Introduction: Introduction to Operating System Concepts (including Multitasking, multiprogramming, multi user, Multithreading etc)., Types of Operating Systems: Batch operating system, Time-sharing systems, Distributed OS, Network OS, Real Time OS; Various Operating system services, architecture, System programs and calls.

Unit-II

Process Management: Process concept, process scheduling, operation on processes; CPU scheduling, scheduling criteria, scheduling algorithms -First Come First Serve (FCFS), Shortest-Job-First (SJF), Priority Scheduling, Round Robin(RR), Multilevel Queue Scheduling.

Unit-III

Memory Management: Logical & Physical Address Space, swapping, contiguous memory allocation, non-contiguous memory allocation paging and segmentation techniques, segmentation with paging; virtual memory management - Demand Paging & Page-Replacement Algorithms; Demand Segmentation.

File System: Different types of files and their access methods, directory structures, various allocation methods, disk scheduling and management and its associated algorithms, Introduction to distributed file system.

Unit-IV

Process-Synchronization & Deadlocks: Critical Section Problems, semaphores; methods for handling deadlocks-deadlock prevention, avoidance & detection; deadlock recovery.

I/O Systems: I/O Hardware, Application I/O Interface, Kernel, Transforming I/O requests, Performance Issues.

Unix System And Windows NT Overview:

Unix system call for processes and file system management, Shell interpreter, Windows NT architecture overview, Windows NT file system.

Text Books:

Operating System Concepts by Silberchatz et al, 5th edition, 1998, Addison-Wesley.

Modern Operating Systems by A. Tanenbaum, 1992, Prentice-Hall.

Operating Systems Internals and Design Principles by William Stallings, 4th edition, 2001, Prentice-Hall

Reference Books:

Operating System by Peterson, 1985, AW.

Operating System by Milankovic, 1990, TMH.

Operating System Incorporating With Unix & Windows By Colin Ritchie, 1974, TMH.

Operating Systems by Mandrik & Donovan, TMH

Operating Systems - Advanced Concepts By MukeshSinghal, N.G. Shivaratri, 2003, T.M.H

Note:

In the semester examination, the examiner will set two questions from each unit (total 08 questions in all), covering the entire syllabus. The students will be

required to attempt only 5 questions selecting at least one question from each unit.

**CSE
303B COMPUTER GRAPHICS**
**B. Tech. Semester - V (Computer Science and Engg.) (Common with
IT VIth sem)**

L	T	P	Credits	Class Work	:	25
3	1	-	4	Examination	:	Marks
				Total	:	75Marks
				Duration of	:	s
				Examination	:	100
						Marks
						3 Hours

Unit-I

Introduction to Computer Graphics: What is Computer Graphics, Computer Graphics Applications, Computer

Graphics Hardware and software, Two dimensional Graphics Primitives: Points and Lines, Line drawing

algorithms: DDA, Bresenham's; Circle drawing algorithms: Using polar coordinates, Bresenham's circle drawing, mid point circle drawing algorithm; Filled area algorithms: Scanline: Polygon filling algorithm, boundary filled algorithm.

Unit-II

Two/Three Dimensional Viewing: The 2-D viewing pipeline, windows, viewports, window to view port mapping; Clipping: point, clipping line (algorithms):- 4 bit code algorithm, Sutherland-cohen algorithm, parametric line clipping algorithm (Cyrus Beck).

Polygon clipping algorithm: Sutherland-Hodgeman polygon clipping algorithm.
Two dimensional

transformations: transformations, translation, scaling, rotation, reflection, composite transformation.

Three dimensional transformations: Three dimensional graphics concept, Matrix representation of 3-D Transformations, Composition of 3-D transformation.

Unit-III

Viewing in 3D: Projections, types of projections, the mathematics of planner geometric projections, coordinate systems.

Hidden surface removal: Introduction to hidden surface removal .Z- buffer algorithm , scanline algorithm, area sub-division algorithm.

Unit-IV

Representing Curves and Surfaces: Parametric representation of curves: Bezier curves, B-Spline curves.

Parametric representation of surfaces; Interpolation method.

Illumination, shading, image manipulation: Illumination models, shading models for polygons, shadows, transparency. What is an image? Filtering, image processing, geometric transformation of images.

TEXT BOOKS:

Computer Graphics Principles and Practices second edition by James D. Foley, Andeies van Dam, Stevan K. Feiner and Jobh F. Hughes, 2000, Addison Wesley.

Computer Graphics by Donald Hearn and M.Pauline Baker, 2nd Edition, 1999, PHI

REFERENCE BOOKS:

Procedural Elements for Computer Graphics – David F. Rogers, 2001, T.M.H Second Edition
Fundamentals of 3Dimensional Computer Graphics by Alan Watt, 1999, Addison Wesley.
Computer Graphics: Secrets and Solutions by Corrign John, BPB
Graphics, GUI, Games & Multimedia Projects in C by Pilania & Mahendra, Standard Publ.

Computer Graphics Secrets and solutions by Corrign John, 1994, BPV
Introduction to Computer Graphics By N. Krishanmurthy T.M.H 2002

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CSE 305B COMPUTER NETWORKS
B. Tech. Semester - V (Computer Science and Engg.)
(Common with IT)

L	T	P	Credits	Class Work	:	25
3	1	--	4	Examination	:	75Marks
				Total	:	100
				Duration of	:	Marks
				Examination	:	3 Hours

Unit-I:

OSI Reference Model and Network Architecture: Introduction to Computer Networks, Example networks ARPANET, Internet, Private Networks, Network Topologies: Bus, Star, Ring, Hybrid, Tree, Complete, Irregular -Topology; Types of Networks : Local Area Networks, Metropolitan Area Networks, Wide Area Networks; Layering architecture of networks, OSI model, Functions of each layer, Services and Protocols of each layer.

Unit-II:

TCP/IP: Introduction, History of TCP/IP, Layers of TCP/IP, Protocols, Internet Protocol, Transmission Control Protocol , User Datagram Protocol, IP Addressing, IP address classes, Subnet Addressing, Internet Control Protocols, ARP, RARP, ICMP, Application Layer, Domain Name System, Email – SMTP, POP,IMAP; FTP, NNTP, HTTP, Overview of IP version 6.

Unit-III:

Local Area Networks: Introduction to LANs, Features of LANs, Components of LANs, Usage of LANs, LAN Standards, IEEE 802 standards, Channel Access Methods, Aloha, CSMA, CSMA/CD, Token Passing, Ethernet, Layer 2 & 3 switching, Fast Ethernet and Gigabit Ethernet, Token Ring, LAN interconnecting devices: Hubs, Switches, Bridges, Routers, Gateways.

Unit-IV:

Wide Area Networks: Introduction of WANs, Routing, Congestion Control, WAN Technologies, Distributed Queue Dual Bus (DQDB), Synchronous Digital Hierarchy (SDH)/ Synchronous Optical Network (SONET), Asynchronous Transfer Mode (ATM), Frame Relay, Wireless Links.

Introduction to Network Management: Remote Monitoring Techniques: Polling, Traps, Performance Management, Class of Service, Quality of Service, Security management, Digital signatures, SSL, Firewalls, VLANs, Proxy Servers.

Text Book:

Computer Networks (3rd edition), Tanenbaum Andrew S., International edition, 1996.

Reference Books:

Data Communications, Computer Networks and Open Systems (4th edition), Halsall Fred, 2000, Addison Wesley, Low Price Edition.

Business Data Communications, Fitzgerald Jerry,. Computer Networks – A System Approach, Larry L. Peterson & Bruce S. Davie, 2nd Edition

Note:

In the semester examination, the examiner will set two questions from each unit (total 08 questions in all), covering the entire syllabus. The students will be required to attempt only 5 questions selecting at least one question from each unit.

CSE 307B ANALYSIS AND DESIGN OF ALGORITHMS
B. Tech. Semester - V (Computer Science and Engg.)
(Common with IT)

L	T	P	Credits	Class Work	25
3	1	--	4	Examination	: Marks
				Total	75Mark
				Duration of	: s
				Examination	100
					: Marks
					: 3 Hours

Unit-I

Brief Review of Graphs, Sets and disjoint sets, union, sorting and searching algorithms and their analysis in terms of space and time complexity.

Divide and Conquer: General method, binary search, merge sort, quick sort, selection sort, Strassen's matrix multiplication algorithms and analysis of algorithms for these problems.

Unit-II

Greedy Method: General method, knapsack problem, job sequencing with dead lines, minimum spanning trees, single source paths and analysis of these problems.

Dynamic Programming: General method, optimal binary search trees, 0/1 knapsack, the traveling salesperson problem.

Unit-III

Back Tracking: General method, 8 queen's problem, graph colouring, Hamiltonian cycles, analysis of these problems. **Branch and Bound:** Method, 0/1 knapsack and traveling salesperson problem, efficiency considerations. Techniques for algebraic problems, some lower bounds on parallel computations.

Unit-IV:-

NP Hard and NP Complete Problems: Basic concepts, Cook's theorem, NP hard graph and NP scheduling problems some simplified NP hard problems.

TEXT BOOKS:

Fundamental of Computer algorithms, Ellis Horowitz and Sartaj Sahni, 1978, Galgotia Publ.,

Introduction To Algorithms, Thomas H Cormen, Charles E Leiserson And Ronald L Rivest: 1990, TMH

REFERENCE BOOKS:

The Design and Analysis of Computer Algorithm, Aho A.V. Hopcroft J.E., 1974, Addison Wesley.

Algorithms-The Construction, Proof and Analysis of Programs, Berlion, P.Bizard, P., 1986. Johan Wiley & Sons,

Introduction to Design and Analysis of Algorithm, Goodman, S.E. & Hedetniemi, 1997, MGH.

Introduction to Computers Science- An algorithms approach , Jean Paul Trembley, Richard B.Bunt, 2002, T.M.H. .

Note:

In the semester examination, the examiner will set two questions from each unit (total 08 questions in all), covering the entire syllabus. The students will be required to attempt only 5 questions selecting at least one question from each unit.

CSE 309B THEORY OF AUTOMATA & COMPUTATION
B. Tech. Semester - V (Computer Science and Engg.) (Common with IT VIth Sem)

L	T	P	Credits	Class Work	25
3	1	--	4	Examination	: Marks
				Total	75Mark
				Duration of	: s
				Examination	100
					: Marks
					: 3 Hours

Unit-I

Basic Computational Constructs : Finite State Systems, Basic Definitions Non-Deterministic finite automata (NFA), Deterministic finite automata (DFA), Equivalence of DFA and NFA Finite automata with E-moves, Regular Expressions, Equivalence of finite automata and Regular Expressions, Regular expression conversion and vice versa. Conversion of NFA to DFA by Arden's Method

Concept of basic Machine, Properties and limitations of FSM, Moore and Mealy Machines, Equivalence of Moore and Mealy machines,.

Unit-II

Regular Sets & Grammars : The Pumping Lemma for Regular Sets, Applications of the pumping lemma, Closure properties of regular sets, Myhill-Nerode Theorem and minimization of finite Automata, Minimization Algorithm.

Definition, Context free and Context sensitive grammar, Ambiguity regular grammar, Reduced forms, Removal of useless Symbols and unit production, Chomsky Normal Form (CNF), Greibach Normal Form (GNF).

Unit-III

Pushdown Automata & Turing Machines : Introduction to Pushdown Machines, Applications of Pushdown Machines

Deterministic and Non-Deterministic Turing Machines, Design of T.M, Halting problem of T.M., Post's Correspondence Problem.

Unit-IV

Chomsky Hierarchies & Computability: Chomsky hierarchies of grammars, Unrestricted grammars, Context sensitive languages, Relation between languages of classes.

Primitive Recursive Functions.

TEXT BOOK:

Introduction to automata theory, language & computations- Hopcroft & O.D.Ullman, R Mothwani, Addison Wesley Publishers

REFERENCE BOOKS:

Theory of Computer Sc.(Automata, Languages and computation):K.L.P.Mishra & N.Chandrasekaran, 2000, PHI.
Introduction to formal Languages & Automata-Peter Linz, 2001, Narosa Publ..
Fundamentals of the Theory of Computation- Principles and Practice by Ramond Greenlaw and H. James Hoover, 1998, Harcourt India Pvt. Ltd..

Elements of theory of Computation by H.R. Lewis & C.H. Papaditriou, 1998, PHI.
Introduction to languages and the Theory of Computation by John C. Martin 2012,
T.M.H.

Note:

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ECE 309B MICROPROCESSOR AND INTERFACING
B. Tech. Semester - V (Common to BME, CSE, EL, AEI)

L	T	P	Credits	Class Work	25
3	1	--	4	Examination	: Marks
				Total	75Mark
				Duration of	: s
				Examination	100
					: Marks
					: 3 Hours

UNIT I

THE 8086 MICROPROCESSOR ARCHITECTURE:

Architecture, block diagram of 8086, details of sub-blocks such as EU, BIU; memory segmentation and physical address computations, program relocation, addressing modes, instruction formats, pin diagram and description of various signals.

INSTRUCTION SET OF 8086 & PROGRAMING:

Instruction execution timing, assembler instruction format, data transfer instructions, arithmetic instructions, branch instructions, looping instructions, NOP and HLT instructions, flag manipulation instructions, logical instructions, shift and rotate instructions, directives and operators, programming examples.

UNIT II

THE X86 FAMILY (80186, 80286, 80386, 80486) MICROPROCESSOR ARCHITECTURE AND PRGRAMMING:

Architecture, block diagram, details of sub-blocks, hardware features and description of various signals, interrupts, multitasking, addressing modes, instruction set and programming example.

THE PENTIUM PROCESSOR AND OTHER ADVANCED PROCESSORS:

Enhanced features of Pentium, Pentium Pro, Pentium-II, Pentium-III, Pentium-IV, Multi-core Technology, Mobile Processor.

UNIT III

INTERFACING DEVICE:

The 8255 PPI chip: Architecture, control words, modes and examples..

PERIHHERAL DEVICES:

Introduction to DMA process, 8237 DMA controller, 8259 Programmable interrupt controller, Programmable interval timer chips.

UNIT IV

COMMUNICATION INTERFACE: Parallel interface, serial interface, PCI interface, PCMCIA, USB interface.

PERSONNAL COMPUTER: Modern PC, motherboard, chipset, expansion buses, memory-SIMM and DIMM.

Reference Books:

“The Intel Microprocessors 8086- Pentium Processor”, Brey, 4th Edition, 2005.

“Microprocessors and interfacing”, D. V. Hall, Tata McGraw-Hill, 2nd Edition, 2006.

“Microcomputer Systems: The 8086/8088 Family: Architecture, Programming and Design”, Liu Yu-Chang and Gibson Glenn A., Prentice Hall of India, 2003.

“Advanced Microprocessors and Peripherals Architectures, Programming and Interfacing”, Ray A. K. and Burchandi, Tata McGraw Hill, 2002.

“Microprocessor based System Design UBS”, Rafiquzzman, Wiley-Interscience, 5th Edition, 2005.
“The X86 PC: Assembly Language, Design and interfacing”, M. A. Mazidi, J. P. Maizidi and Danny Causey, Pearson, 5th Edition, 2011.
“The X86 Microprocessor (Architecture, Programming and Interfacing)”, L. B. Das, Pearson, 2010.
“Advanced Microprocessor”, Daniel Tabak, Tata McGraw-Hill, 2nd Edition, 2012.
“Fundamentals of Microprocessor and Microcomputers”, B. Ram, Dhanpat Rai Publications, 5th edition, 2008.
“Microprocessor & Interfacing”, Singh & Singh, Satya Parakashan.

Note:

In the semester examination, the examiner will set two questions from each unit (total 08 questions in all), covering the entire syllabus. The students will be required to attempt only 5 questions selecting at least one question from each unit.

CSE 321B OPERATING SYSTEMS LAB
B. Tech. Semester - V (Computer Science and
Engg)

L	T	P	Credits	Class Work	: 20 Marks
		2	1	Examination	: 30Marks
				Total	: 50 Marks
				Duration of	
				Examination	: 3 Hours

Study of WINDOWS 2000 Operating System.

Administration of WINDOWS 2000 (including DNS,LDAP, Directory Services).

Study of LINUX Operating System (Linux kernel, shell, basic commands pipe & filter commands).

Administration of LINUX Operating System.

Writing of Shell Scripts (Shell programming).

AWK programming.

CSE 323B COMPUTER GRAPHICS LAB

B. Tech. Semester - V (Computer Science and Engg.) (Common with IT VIth Sem)

L	T	P	Credits	Class Work	:	20 Marks
		2	1	Examination	:	30Marks
				Total	:	50 Marks
				Duration of Examination	:	3 Hours

LIST OF PRACTICALS

Write a program for 2D line drawing as Raster Graphics Display.

Write a program for circle drawing as Raster Graphics Display.

Write a program for polygon filling as Raster Graphics Display

Write a program for line clipping.

Write a program for polygon clipping.

Write a program for displaying 3D objects as 2D display using perspective transformation.

Write a program for rotation of a 3D object about arbitrary axis.

Write a program for Hidden surface removal from a 3D object.

NOTE: At least 5 more exercises to be given by the concerned teacher.

COMPUTER NETWORKS
CSE 325B LAB
B. Tech. Semester - V (Computer Science and Engg.) (Common with IT)

L	T	P	Credits	Class Work	:	20 Marks
		2	1	Examination	:	30 Marks
				Total	:	50 Marks
				Duration of Examination	:	3 Hours

Write specifications of latest desktops and laptops.

Familiarization with Networking Components and devices: LAN Adapters, Hubs, Switches, Routers etc.

Familiarization with Transmission media and Tools: Co-axial cable, UTP Cable, Crimping Tool, Connectors etc.

Preparing straight and cross cables.

Study of various LAN topologies and their creation using network devices, cables and computers.

Configuration of TCP/IP Protocols in Windows/Linux.

Implementation of file and printer sharing.

Designing and implementing Class A, B, C Networks

Subnet planning and its implementation

Installation of ftp server and client.

MICROPROCESSOR AND INTERFACING
ECE329B LAB

B. Tech Semester -V (BME, CSE, EL, AEI)

L	T	P	Credits	Class Work	: 20 Marks
2			1	Examination	: 30Marks
				Total	: 50 Marks
				Duration of	
				Examination	: 3 Hours

LIST OF EXPERIMENTS:

- To study the architecture of 8086 microprocessor and 8086 microprocessor kit
- Write a program to add the contents of the memory location 3000:0400 H to the content of 4000:0700 H and store the result in 6000:0900 H
- Write a program to add 16 bit number using 8086 instruction set.
- Write a multiplication of two 16 bit number using 8086 instruction set.
- Write a program for division of two 16 bit numbers using 8086 instruction set.
- Write a program factorial of a number.
- Write a Program to transfer a block of data without overlap.
- Write a Program to transfer a block of data with overlap.
- Write a program to find the average of two numbers.
- Write a Program to check whether data byte is odd or even
- Write a program to find maximum number in the array of 10 numbers.
- Write a program to find the sum of the first 'n' integers.
- Write a program to generate a square wave.
- Write a program to generate a rectangular wave.
- Write a program to generate a triangular wave.

CSE 327B PROFESSIONAL TRAINING I					
B. Tech. Semester - V (Information Technology)					
L	T	P	Credits	Class Work	: 50 Marks
--	--		2	Total	: 50 Marks
	2				

At the end of 4th semester each student would undergo four weeks Professional Training in an Industry/ Institute/ Professional Organization/ Research Laboratory etc. with the prior approval of the Training and Placement Officer of the University and submit in the department a typed report along with a certificate from the organization.

The typed report should be in a prescribed format.

The report will be evaluated in the V Semester by a Committee consisting of three teachers from different specialization to be constituted by the Chairperson of the department. The basis of evaluation will primarily be the knowledge and exposure of the student towards different processes and the functioning of the organization.

The student will interact with the committee through presentation to demonstrate his/her learning.

Teachers associated with evaluation work will be assigned 2 periods per week load.

