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MEHSANA DISTRICT EDUCATION FOUNDATION SANCHALIT

# U. V. Patel College of Engineering

ESTD 1997

“Ganpat Vidyanagar”Mehsana-Gozaria Highway, Dist. Mehsana. Kherva-382711

Ref. No. :

Date:

## Engineering Major: Computer Engineering

Teaching and Examination Scheme

For

**B.E. (Computer Engineering)**

**First Year**

Code	Subject	Teaching Scheme (Hrs.)			Examination Scheme				
		Theory	Pract.	Total	Theory		Pract. Marks	TW Marks	Total
					Hrs	Marks			
101	Mathematics 1 & 2	4	-	4	4	100	-	-	100
102	Elements of Civil Engg. & Mech. Engg. (Including Workshop)	2	4	6	3	100	-	100	200
103	Elements of Engg. Mechanics	2	1	3	3	100	-	25	125
104	Material Science	2	-	2	3	100	-	-	100
105	Fundamentals of Electrical Engg. & Electronics	2	1	3	3	100	-	25	125
106	Engineering Graphics	2	2	4	4	100	-	50	150
107	Introductory Course in Computer	2	4	6	3	100	50	50	200
108	Communication Skills	2	-	2	2	50	-	-	50
<b>Total Contact Hours</b>		<b>18</b>	<b>12</b>	<b>30</b>	<b>Grand Total 1050</b>				



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Ref. No. :

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## B.E. (Computer Engineering) Semester III

Code	Subject	Teaching Scheme (Hrs.)			Examination Scheme				
		Theory	Practical	Total	Theory		Pract. Marks	TW Marks	Total
					Hrs	Marks			
CE301	Mathematics III	4	-	4	3	100	-	-	100
CE302	Electronics Engg.	4	2	6	3	100	25	25	150
CE303	Business Information System	4	2	6	3	100	25	25	150
CE304	Object Oriented Programming	4	2	6	3	100	25	25	150
CE305	Electrical Engg.	4	2	6	3	100	25	25	150
CE306	Software Packages	-	4	4	-	-	50	50	100
<b>Total Contact Hours</b>		<b>20</b>	<b>12</b>	<b>32</b>	<b>Grand Total</b>				<b>800</b>

**Note:** CE301 , CE302 , CE303 & CE304 are common with IT301 , IT302 , IT303 & IT304 respectively of Sem. III of IT.

## B.E. (Computer Engineering) Semester IV

Code	Subject	Teaching Scheme (Hrs.)			Examination Scheme				
		Theory	Practical	Total	Theory		Pract. Marks	TW Marks	Total
					Hrs	Marks			
CE401	Discrete Mathematics	3	-	3	3	100	-	-	100
CE402	Computer Oriented Numerical Methods	3	4	7	3	100	50	50	200
CE403	Digital Electronics	4	2	6	3	100	25	25	150
CE404	Data Structure	4	2	6	3	100	25	25	150
CE405	Control & Instrumentation	4	2	6	3	100	25	25	150
CE406	Circuit Theory	2	2	4	2	50	25	25	100
<b>Total Contact Hours</b>		<b>20</b>	<b>12</b>	<b>32</b>	<b>Grand Total</b>				<b>850</b>

**Note:** CE401 , CE402 , CE403 & CE404 are common with IT401 , IT402 , IT403 & IT404 respectively of Sem. IV of IT.



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## B.E. (Computer Engineering) Semester V

Code	Subject	Teaching Scheme (Hrs.)			Examination Scheme				
					Theory		Pract. Marks	TW Marks	Total
		Theory	Pract.	Total	Hrs	Marks			
CE501	Database Management System	4	2	6	3	100	25	25	150
CE502	Computer Graphics	4	2	6	3	100	25	25	150
CE503	Microprocessors-I	4	2	6	3	100	25	25	150
CE504	Communication Systems	3	2	5	3	100	25	25	150
CE505	Data Security	4	2	6	3	100	25	25	150
CE506	Engineering Management	3	-	3	3	100	-	-	100
<b>Total Contact Hours</b>		<b>22</b>	<b>10</b>	<b>32</b>	<b>Grand Total</b>				<b>850</b>

**Note:** CE501 & CE502 are common with IT501 and IT502 respectively of Sem. V of IT.

## B.E. (Computer Engineering) Semester VI

Code	Subject	Teaching Scheme (Hrs.)			Examination Scheme				
					Theory		Pract. Marks	TW Marks	Total
		Theory	Pract.	Total	Hrs	Marks			
CE601	Operating Systems	4	2	6	3	100	25	25	150
CE602	Computer Organisation	4	2	6	3	100	25	25	150
CE603	Computer Peripherals	3	2	5	3	100	25	25	150
CE604	Computer Networks	4	2	6	3	100	25	25	150
CE605	System Software	3	2	5	3	100	25	25	150
CE606	Microprocessors-II	3	2	5	3	100	25	25	150
<b>Total Contact Hours</b>		<b>21</b>	<b>12</b>	<b>33</b>	<b>Grand Total</b>				<b>900</b>

**Note:** CE601 & CE602 are common with IT601 and IT602 respectively of Sem. VI of IT.



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## B.E. (Computer Engineering) Semester VII

Code	Subject	Teaching Scheme (Hrs.)			Examination Scheme				
		Theory	Pract.	Total	Theory		Pract. Marks	TW Marks	Total
					Hrs	Marks			
CE701	Parallel Processing	4	2	6	3	100	25	25	150
CE702	Software Engg	4	2	6	3	100	25	25	150
CE703	Formal Language & Automata Theory	3	2	3	3	100	-	-	150
CE704	Distributed Operating System	3	2	7	3	100	50	50	200
CE705	Elective – 1	3	2	5	3	100	25	25	150
CE706	Elective – 2	3	2	5	3	100	25	25	150
<b>Total Contact Hours</b>		<b>20</b>	<b>12</b>	<b>32</b>	<b>Grand Total</b>				<b>900</b>

**Elective 1 & 2:** (Any Two from the following subjects )

- 1 : Artificial Intelligence
- 2 : Internet Engineering
- 3 : Language Translator
- 4 : Fault Diagnosis of Computers

**Note:** CE701 & CE702 are common with IT701 and IT702 respectively of Sem. VII of IT.



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## B.E. (Computer Engineering) Semester VIII (Industrial Training)

Code	Subject	Teaching Scheme (Hrs.)			Examination Scheme				
					Theory		Pract. Marks	TW Marks	Total
		Theory	Practical	Total	Hrs	Marks			
CE801	Project and Seminar	-	42	42	-	-	300	100	400
<b>Total Contact Hours</b>		-	<b>42</b>	<b>42</b>	<b>Grand Total</b>			<b>400</b>	

### Project and Seminar :

Industry based Project and Seminar for 16 weeks plus 2 weeks in the Institute at the end. Total 18 weeks.

<u>Particulars</u>	<u>Marks</u>
Project and Presentation	: 300
Project Report	: 100
Total	: 400

### Points to be noted:

- 1 : Teacher should be sent to the industry for interaction with industrial guide.
- 2 : Project work and progress may be evaluated through seminars at the regular intervals.
- 3 : Industry persons may be invited during presentation.
- 4 : Project can be taken up at the Institute in consultation with the industry.



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## Subject Details

for

## Computer Engineering

### B.E. YEAR I -- SEMESTER I & II

[ B.E. YEAR I -- common for all branches of Engineering i.e. Computer Engineering, Information Technology, Electronics and Communication Engineering, Mechatronics Engineering, Mechanical Engineering & Biomedical Engineering. ]

#### 101: MATHEMATICS- 1 & 2

DIFFERENTIAL CALCULUS, INTEGRAL CALCULUS, COMPLEX NUMBERS, INFINITE SERIES, MATRIX ALGEBRA, DIFFERENTIAL EQUATIONS & MODELLING.

• **TEXT BOOK/REFERENCES BOOK(S):**

- 1) Higher Engineering Mathematics {BY Dr.B.S.Grewal.}
- 2) Engineering Mathematics - I. {BY P.N. & J.N.Wartikar.}

#### 102: ELEMENTS OF CIVIL & MECH. ENGINEERING

**Civil Engineering:**

Elements of Surveying, Elements of Water Resources Development, Elements of Environmental Protection.

**Mechanical Engineering:**

Engineering Drives, Internal Combustion Engines, Steam Generators, Introduction to steam and gas turbines, condensers, air compressors and vacuum pumps, Introduction to refrigeration and air conditioning systems.

• **TEXT BOOK/REFERENCES BOOK(S):**

- 1) Surveying vol-1 {By B.C.Punmia.}
- 2) Basic Civil Engg. {By P.D.Deshpande}
- 3) Elements of heat engine {By N.C.Pandya & C.S.Shah}
- 4) Elements of Mechanical Engineering {By S.B.Mathur and D.Domkundwar}
- 5) Irrigation and Hydrology {By B.C. Punmia}

#### 103: ELEMENTS OF ENGINEERING MECHANICS

Introduction, Static, Moment of Inertia, Friction, Kinematics, Kinetics, Simple Machines, Strength and Elasticity, Elasticity, Mechanical Properties of Materials, Support Reaction.

• **TEXT BOOK/REFERENCES BOOK(S):**

- 1) Strength of materials {By S.Ramamrutham and R.Narayan.}
- 2) Engg. Mechanics. { By A.K.Tayal.}
- 3) Engg. Mechanics { By H.J.Shah & Junarker.}



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## 104: MATERIAL SCIENCE

Introduction to material Science, Crystal Geometry, Crystal Imperfections, Metals, Corrosion, Miscellaneous Engineering Materials, Conducting Materials, Magnetic Materials, Insulators, Semiconductors, Optical properties of Materials.

### • TEXT BOOK/REFERENCES BOOK(S):

- 1) Elements of material science {By Van Vlack}
- 2) Material Science and Processes {By Zha & Zha}
- 3) Material Science and Processes {By R.B.Gupta}
- 4) Material Science and Processes {By Narula and Narula and Gupta}
- 5) Material Science and Processes {By Hajra Chaudhry}

## 105: FUNDAMENTALS OF ELECTRICAL ENGG. AND ELECTRONICS

D.C.Circuit, Work, Power and Energy, Capacitor, Electromagnetic, A.C. Fundamentals, A.C.Circuit, Polyphase Circuit, Electronics

### • TEXT BOOK/REFERENCES BOOK(S):

- 1) Electrical Technology Vol-1 {By B.L.Theraja}
- 2) Basic Electrical Engineering {By V.N.Mittal}
- 3) Electronics made simple {By V.K.Mehta}

## 106: ENGINEERING GRAPHICS

### **PART- 1**

Plane Geometry and Machine Parts:-

Engineering curves

Loci of points

Fastening and connecting methods:

### **PART – 2**

Solid Geometry

### **PART -3**

Orthographic Projection

### • TEXT BOOK/REFERENCES BOOK(S):

- 1) Engineering Drawing. VOL -I & II {By P.J.Shah}
- 2) Engineering Drawing. {By N.D.Bhatt}
- 3) Machine Drawing. {By N.D.Bhatt}



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## **107: INTRODUCTORY COURSE IN COMPUTER**

Introduction, Constants, Variables and Data types in C, Operator and expression, Data Input-Output, Control Statement, Looping, Arrays, Character String, Functions, Structure and Handling, Pointers, File Management in C, Dynamic memory allocation and linked list, Pre-processor, Graphics, Program, Microsoft Word, Microsoft Excel, Microsoft PowerPoint.

• **TEXT BOOK/REFERENCES BOOK(S):**

- 1) Programming in C {By E.Balagurusami, TMH}
- 2) Understanding pointer in C {By Yashwant Kanetkar, BPB}
- 3) Programming in C {By Byron S.Gottfried, Schoum series, TMH}

## **108: COMMUNICATION SKILLS**

Introduction, Spoken and conversational English, Basic sentence pattern in English, Concept of Register, Note taking note making.

• **TEXT BOOK/REFERENCES BOOK(S):**

- 1) English Conversation Practice. {By Grant Taylor}
- 2) Good English, {By G.H.Valliance}



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## B.E. YEAR II-- SEMESTER III

### **301: MATHEMATICS III**

FOURIER SERIES, LAPLACE TRANSFORMS, ORDINARY DEFFERENTIAL EQUATIONS, PARTIAL DIFFERENTIAL EQUATIONS, NUMERICAL METHODS

• **TEXT BOOK/REFERENCES BOOK(S):**

- 1) Higher Engineering Mathematics, {By Dr. B.S.Grewal}
- 2) Engineering Mathematics - Vol I, II {By Prof. Wartikar & Wartikar}

### **302: ELECTRONICS ENGINEERING**

DIODES AND THEIR APPLICATIONS, ACTIVE DEVICE ASND CURCUITS, LINEAR INTEGRATED, CIRCUITS, OSCILLATORS.

• **TEXT BOOK/REFERENCES BOOK(S):**

- 1) Electronics for Scientists and Engineers {By T.R.Viswanathan, G.K.Mehta and V Rajaraman}
- 2) Integrated Electronics, Analog and Digital Circuits and Systems {By J Millman and Halkias}
- 3) Microelectronics {By J Millman and A Grabel}

### **303: BUSINESS INFORMATION SYSTEM**

INTRODUCTION TO BUSINESS SYSTEM, PRINCIPAL OF DATA PROCESSING, DATA MANAGEMENT SOFTWARE, PRINCIPLES OF SOFTWARE ENGINEERING.

• **TEXT/REFERENCE BOOK(S):**

- 1) Structured COBOL Programming With Application {By N.I.Sarda}
- 2) Cobol Programming {By Roy and D. Ghosh Dastidar}

### **304: OBJECT ORIENTED PROGRAMMING**

OBJECT ORIENTED CONCEPTS, OBJECT ORIENTED PROGRAMMING STYLE & LANGUAGES, OBJECT ORIENTED LANGUAGES, LOOPS & DECISIONS, INNERITANCE, INTRODUCTION & USE OF SINGLE USER OPERATING SYSTEMS: MS-DOS, WINDOWS.

• **TEXT/REFERENCE BOOK(S) :**

- 1) Object Oriented Programming In Turbo C++ {By Robert Lafore }
- 2) Programming with C++ {By Balagurusamy}
- 3) Dos Manual and Windows-95 Manual



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## **305: ELECTRICAL ENGINEERING-II**

D.C. GENERATORS, D.C. MOTOR, TRANSFORMERS, INDUCTION MOTORS, ELECTRICAL MEASUREMENTS, ILLUMINATION: STUDY OF ILLUMINATION PARAMETER, SUB-STATIONS.

### • **TEXT/REFERENCE BOOK(S) :**

- 1) The Performance and Design of Alternating Current Machines { M.S. Say }
- 2) Principles of Power Systems { V.K.Mehta }
- 3) Electrical Technology { B.L. Theraja }
- 4) Electrical Power { S.L. Uppal }

## **306: SOFTWARE PACKAGES**

WHAT ARE THE SOFTWARE PACKAGES? , OVERVIEW OF IDE OF VB FEATURES OF IDE, SELECTING AND USING CONTROLS, WORKING WITH MODULES & CLASSES, CREATING AND USING MENUS AND TOOLBARS, USING VARIABLES, ARRAYS & CONSTANTS, STORING AND RETRIEVING DATA, USING DIALOG BOXES, WORKING WITH MOUSE, CREATING & USING HELP FILES.

### • **TEXT/REFERENCE BOOK(S) :**

- 1) Visual Basic 5 {By Steve Brown}
- 2) Teach Yourself Visual Basic 5 in 24 Hours {By Greg Perry}
- 3) Visual Basic 6 Programming {Steven Holzner}



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## B.E. YEAR II-- SEMESTER IV

### **401: DISCRETE MATHEMATICS**

PREDICATE CALCULUS, FUZZY SETS, GROUP THEORY, LATTICES, BOOLEAN ALGEBRA, GRAPH THEORY.

• **TEXT BOOK/REFERENCES BOOK(S):**

- 1) Discrete Mathematical Structures with Application to Computer Science {By Tremblay, J.P. & Manohar}
- 2) Discrete Mathematics and Its Applications {By Rosen, Kenneth L.}
- 3) Applied Discrete Structures For Computer Science {By Alan Doerr & Kenneth L.}
- 4) Discrete Mathematical Structures for Computer Science {By Kolman, B& Busby R.C.}

### **402: COMPUTER ORIENTED NUMERICAL METHODS**

Methods for Solution of Equation, Errors (And Numerical And Instabilities) In Numerical Methods, Solution Of Simultaneous Linear Algebraic Equation, Interpolation, Least Squares Approximations, Numerical Differentiation And Integration, Ordinary Differential Equations.

• **TEXT BOOK/REFERENCES BOOK(S):**

- 1) Numerical Methods with FORTRAN IV Case Studies {By William S. Doon. & Daniel D. McCracken.}
- 2) Computer Oriented Numerical Methods {By Rajaraman.}

### **403: DIGITAL ELECTRONICS**

Data and Number Representation - Binary - Complement Representation BCD – ASCII, Boolean algebra, Logic Gates, Minimization, Use of Programs Such As Espresso Inimization. Digital Circuit Technologies, Rtl/Dtl/Dctl/Ttl/Mos/Cmos/Ecl, Analysis of Basic Circuits in These Families, Internal Architecture of Programmable Logic Devices. Combinational Design, Design with Muxes. Sequential Circuits, Flip-Flops, Counters, Shift Registers, Multi Vibrators, State Diagrams -Sequential Circuit Design from State Diagrams - Computer Aids In Synthesis. Memory System - Ram, Rom. EPROM. EPROM, Pal, Plds, Pgas. Bus Structures, Transmission Line Effects, Line Termination. Ad and Da Conversion Techniques and Selected Case Studies. Cad Tools, Fpga Based Design Exercises. Introduction to VLSI Design, Custom and Semi-Custom Design.

• **TEXT/REFERENCE BOOK(S) :**

- 1) Digital Design {By Morris Mano}
- 2) Electronics for Scientists and Engineers {By T.R.Viswanathan, G.K.Mehta and Rajaraman}
- 3) Integrated Electronics, Analog and Digital Circuits and SYSTEMS {By J. MILLMAN AND HALKIAS}



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## 404: DATA STRUCTURES

LINEAR DATA STRUCTURES I: Arrays & Records,

LINEAR DATA STRUCTURES II: Linked Lists

LINEAR DATA STRUCTURES IV: Strings

RECURSION:

NON LINEAR DATA STRUCTURES I: Trees

NON LINEAR DATA STRUCTURES II: Hashing, Sets, Graphs, Files

### • TEXT/REFERENCE BOOK(S) :

- 1) An Introduction to Data Structures with Application {By Tremblay, J.P., P.G. Sorenson}
- 2) Algorithms Data Structures Programs {By Wirth, N.}

## 405: CONTROL & INSTRUMENTATION

GENERALIZED MEASUREMENT SYSTEM,SENSOR FOR MEASURING FOLLOWING QUANTITIES,DIGITAL SENSORS,FEEDBACK CONTROL SYSTEM,TIME-DOMAIN ANALYSIS,FREQ RESPONSE ANALYSIS,STABILITY ANALYSIS,DESIGN AND COMPENSATION TECHNIQUES.

### • TEXT/REFERENCE BOOK(S) :

- 1) Measurement Systems - Application and Design {By E.O.Deobelin}
- 2) Control System Engineering {By I.J.Nagarath and M. Gopal}
- 3) Modern Control Engineering {By K.Ogata}
- 4) Transducers and Instrumentation {By D.V.S. Murthy}

## 406: CIRCUIT THEORY

DEVELOPMENT OF CIRCUIT CONCEPT,CONVENTION FOR DESCRIBING NETWORKS,NETWORK EQUATION, DIFFERENTIAL EQUATION,INITIAL CONDITION IN NETWORKS,LAPLACE TRANSFORMATION,TRANSFORMS OF OTHER SIGNAL WAVEFORM,IMPEDENCE FUNCTION AND NETWORK THEOREM,NETWORKS FUNCTIONS TWO PORT PARAMETERS,SINUSOIDAL STEADY STATE ANALYSIS.

### • TEXT/REFERENCE BOOK(S) :

- 1) Network Analysis {By M.E.Vanvalkenberg}
- 2) Network Analysis {By G.K.Mithal}



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## B.E. YEAR III-- SEMESTER V

### 501: DATABASE MANAGEMENT SYSTEMS

INTRODUCTORY CONCEPTS, RELATIONAL THEORY AND SQL RELATIONAL CONCEPTS, APPLICATION DEVELOPMENT USING SQL, QUERY OPTIMIZATION, SPECIAL TOPICS.

- **TEXTS/REFERENCES :**

- 1) Database Systems Concepts {By H.F.Korth and Silberschatz Abraham}
- 2) Fundamental of database systems {By Ramez Elmasri and Shamkant B Navatha}

### 502: COMPUTER GRAPHICS

INTRODUCTION, BASIC RASTER GRAPHICS, GEOMETRIC MAINIPULATION, ELEMENTARY 3D GRAPHICS, VISIBILITY.

#### **ADVANCED ISSUES:**

Any One of the Following Topics:

- A) Curves and Surfaces: Parametric Representation. Benzier and B-Spline Curves
- B) Rendering: Ray tracing, Antialiasing, Fractals, Gourard and Phong Shading.
- C) User Interface: Issues in User Interface, Elements of Window Systems (X, Mac-Os, Mswindows), Elements Of Toolkit Programming.

- **TEXT/REFERENCE BOOK(S) :-**

- 1) Computer Graphic {By D.Hearn and P.Baker}

### 503: MICROPROCESSOR-I

#### **8085 Microprocessor Architecture and Memory Interfacing.**

- Microprocessor Architecture and its Operations.
- Memory and I/O Devices.

#### **Interfacing I/O Devices:**

- Basic Interfacing Concepts.
- Interfacing Output Devices.
- Interfacing Input devices.
- Memory-Mapped I/O.

#### **Programming the 8085:**

- Introduction to 8085 Assembly Language programming.
- Introduction to 8085 Instructions.
- Programming Techniques with Additional instructions.
- Stack and Subroutines.

#### **Interfacing Peripherals:**

- Interrupts.
- General Purpose Programmable Peripheral Devices .

- **TEXT/REFERENCE BOOK(S) :-**

- 1) Microprocessors Architecture Programming and Applications With The 8085. {By Ramesh S. Gaonkar.}



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Ref. No. :

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## 504: COMMUNICATION SYSTEMS

ANALOGUE MODULATION TECHNIQUES, DIGITAL COMMUNICATION, DIGITAL MODULATION TECHNIQUES, ERROR CONTROL, LIGHT COMMUNICATIONS, SATELLITE COMMUNICATION, Satellite Services- INSAT, INTELSAT, DBS, MSAT, VSAT, RADARSAT, INMARSAT, GPS, ORBCOMM, IRIDIUM etc, FAX, TELEVISION.

- **TEXT/REFERENCE BOOK(S) :-**

- 1) ELECTRONIC COMMUNICATIONS {By RODDY AND COOLAN}  
PHI

## 505: DATA SECURITY

PHYSICAL PROTECTION METHODS AND DAMAGE AVOIDANCE PLANS, PROTECTION FROM INTRUDERS, HARDWARE ACCESS CONTROL, ATTACKS ON SOFTWARE AND ACCESS CONTROLS, PERSONAL COMPUTER SECURITY, SECURE OPERATING SYSTEM, DATA BASE SECURITY, COMPUTER NETWORK SECURITY, DATA DISPOSAL METHODS.

- **TEXT/REFERENCE BOOK(S) :-**

- 1) Security in Computing {By Charles P. Fleeger }
- 2) Computer and Communications Security Strategies for the 1990s  
{By J. Ranade, Consulting Editor } McGraw Hill
- 3) Information Security Handbook {By William Caelli, Dennis Longley and others}  
Macmillan Press Ltd.
- 4) Network Security {By Richard H. Baker } McGraw Hill

## 506: ENGINEERING MANAGEMENT

Forms of Business Organization, Industrial Finance-Important Sources, Elements of Cost and Depreciation, Fundamentals of Management, Principles of Management, Planning, Organization, Delegation and Decentralization, Control, Decision Making, Motivation and Morale, Marketing Management, Production management, Personal management.

- **TEXT/REFERENCE BOOK(S) :-**

- 1) Organization and Management {By R D Agrawal}
- 2) Fundamentals of Business Organization Management {By C R Bhushan}
- 3) Fundamentals of Business Organization and Management {By Y K Bhushan}



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## B.E. YEAR III-- SEMESTER VI

### **601: OPERATING SYSTEMS**

Introduction to OS. OS Services and Kernal, Multiprogramming and Time Sharing, Processor Scheduling. Memory Management, Paging and Segmentation, Virtual Memories, I/O and Device Management, Disk and File Management, Deadlocks, Concurrent Processes.

Protection and Security, Introduction to Multiprocessor and Distributed Operating Systems.

- **TEXT/REFERENCE BOOK(S) :-**

- 1) Operating System Concepts {By A Silberschatz and Peter B Galvin}
- 2) Systems Programming & Operating Systems {By D.M.Dhandhere}

### **602: COMPUTER ORGANIZATION**

Evolution of Computer Systems, Central Processing Unit, Machine Language, Instructions, Arithmetic and Logic Unit, Arithmetic Processor, Controller Design, Memory Subsystem, Solution for the Speed Mismatch between Main Storage and CPU, Multiple Module Memory, Associative Memory, Virtual memory, Input-Output Processing, Bus Interface, IO Accessing and Data Transfer, IO Interrupt, IO Channel/Processor, Computer System Architecture, Architecture of Memory Subsystem, IO Subsystem Architecture.

- **TEXT/REFERENCE BOOK(S) :-**

- 1) Computer Organization and Design {By P.Pal Chaudhury}

### **603: COMPUTER PERIPHERALS**

INPUT DEVICES, OUTPUT DEVICES, SECONDARY STORAGE DEVICES, PRESENTATION PRODUCTS, POINTING DEVICES, AUXILIARY DEVICES.

- **TEXT/REFERENCE BOOK(S) :-**

- 1) Information Technology, The Breaking Wave {By Dennis P. Curtin & others}
- 2) Audio and Video Products {By R. G. Gupta}
- 3) Product Literature of Manufacturers



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## **604: COMPUTER NETWORKS**

OVERVIEW OF COMPUTER NETWORKS:

Uses of Computer Networks: Networks for companies, Networks for people.

Network Hardware: LANs, MANs, WANs, Wireless networks, Internetworks.

Network Software: Protocol Hierarchies, Design Issues for the Layers, Interfaces and services, Connection Oriented and Connectionless Services, Service Primitives.

Reference Models: The OSI Reference Model, the TCP/IP Reference Model.

Example Networks: Novell Netware, the ARPANET, NSFNET, the Internet, Gigabit Testbeds.

Example Data Communication Services: SMDS, X.25, Frame Relay, ISDN, ATM, Comparison of Services.

THE PHYSICAL LAYER

Transmission Media: Magnetic Media, Twisted pair, Baseband Coaxial Cable, Broadband Coaxial Cable, Fiber Optics.

Wireless Transmission: Electromagnetic Spectrum, Radio Transmission, Microwave Transmission, Infrared and Millimeter Waves, Light Transmission.

Telephone System: Structure of the Telephone System, Local Loop, Trunks and Multiplexing.

ISDN and ATM: ISDN service, Architecture and Interface, Broadband ISDN, Virtual Circuits v/s Circuit Switching, Transmission in ATM Networks.

THE DATA LINK LAYER, THE NETWORK LAYER, THE TRANSPORT LAYER, THE APPLICATION LAYER

Domain Name System: DNS Name Space, Resource Records, Name Servers.

- **TEXT/REFERENCE BOOK(S) :-**

- 1) Computer Networks {By TANENBAUM ANDREW S.}

## **605: SYSTEM SOFTWARE**

ASSEMBLERS, MACRO PROCESSORS, LINKER & LOADER, INTERODUCTION TO COMPILER, DEBUGGER, SOFTWARE LIBRARY, ODBC & DEVICE DRIVERS.

- **TEXT/REFERENCE BOOK(S) :-**

- 1) SYSTEM PROGRAMMING {By DHAMDHARE P A}

## **606: MICROPROCESSORS-II**

Introduction to Microcomputers and Microprocessors,8086 internal architecture, Introduction to programming the 8086,8086 Family assembly language programming,8086 instructions descriptions & assembler directives,8086 interrupts & hardware interrupt application, Introduction to Pentium and Pentium-pro microprocessors, Introduction to Single Chip Microcontroller, Introduction to other 16- and 32-bit Microprocessors.

- **TEXT/REFERENCE BOOK(S) :-**

- 1) Microprocessors and Interfacing Programming and Hardware {By Douglas V. Hall},
- 2) Microprocessor Architecture, Programming and Applications {By RAMESH S. GAONKAR}



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## B.E. YEAR IV-- SEMESTER VII

### 701: PARALLEL PROCESSING

Introduction to Parallel Processing. Architectural Classification and Techniques.

Arithmetic and Instruction Pipelines, Pipelining Hazard and Scheduling Theory, Super Scalar Architectures, Asynchronous Pipelines.

Interconnection Network, Hyper Cubes, Suffle Exchanges, Tree, Meshes And Butterfly Networks, Parallel Algorithm For Linear Algebra, Sorting, Fourier Transformation. Systolic Arrays.

Vector Processors.

Shared Memory Multiprocessor System.

Data Flow Architectures.

Parallel Processing - Software Issues, Operating System for Parallel Processor.

Selected Case Studies For Parallel Computing Systems.

- **TEXT/REFERENCE BOOK(S) :-**

- 1) Computer Architecture and Quantitative Approach, {By John L. Hennessy and David A. Patterson}
- 2) Computer Architecture and Parallel Processing, {By Kai Hwang and Faye A. Briggs}
- 3) Computer Structure; Principles and Examples, {By D.P.Siewiorek, C.G.Bell,A Newell}

### 702: SOFTWARE ENGINEERING

Introduction Of Software Engineering, Requirements Engineering, Structured System Design, Data Oriented Analysis & Design, Analysis & Design Of Real Time Systems, Software Quality Assurance, User Interface Design, Software Complexity & Reliability, Software Project Management.

- **TEXT/REFERENCE BOOK(S) :-**

- 1) Software Engineering: A Practitioner's Approach, {By Pressman R.S.}
- 2) Software Engineering, {By Sommerville I.}

### 703: FORMAL LANGUAGE & AUTOMATA THEORY

BASIC DEFINITIONS

OPERATIONS ON LANGUAGES: Closure Properties of Language Classes. Context Free Languages: The Chomsky Griebach Normal Forms. Linear Grammars and Regular Languages. Regular Expressions. Context Sensitive Languages: The Kuroda Normal Form, One Sided Context Sensitive Grammars.

UNRESTRICTED LANGUAGES: Normal Form and Derivation Graph. Automata and Their Languages: Finite, Pushdown, 2-Push-Down Automata and Turing Machines. The Equivalence of the Automata and the Appropriate Grammars. The Dyck Language.

SYNTAX ANALYSIS: Ambiguity and the Formal Power Series. Formal Properties of LI (K) and Lr (K) Grammars.

DERIVATION LANGUAGES: Rewriting Systems, Algebraic Properties, Canonical Derivations, Context Sensitivity.

CELLULAR AUTOMATA: Formal Language Aspects, Algebraic Properties University & Complexity Variants.

- **TEXT/REFERENCE BOOK(S) :-**

- 1) Introduction to Formal Languages, {By G.E.Reevsz} Mc-Graw Hill.
- 2) Formal Language Theory, {By M.H.Harrison} Addison-Wesley.
- 3) Theory and Applications of Cellular Automata, {By S.Wolfman}



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## 704: DISTRIBUTED OPERATING SYSTEMS

**INTRODUCTION TO DISTRIBUTED COMPUTING.** Distribution Of Data Control: Clock Synchronization, Distributed Termination Problem, Load Distribution, Distributed Elections, Agreement Problem. Dead-Looks In Distributed Systems, Introduction To Fault-Tolerant Computing.

**HIGH LEVEL LANGUAGE SUPPORTS FOR DISTRIBUTED COMPUTING:** Message Passing Primitives, Atomic Actions, Remote Procedure Call Mechanisms. Implementation of These Features. Case Study of Some Languages like Occam II, Linda.

**FORMAL DEVELOPMENT AND VERIFICATION OF DISTRIBUTED ALGORITHMS.**

• **TEXT/REFERENCE BOOK(S) :-**

- 1) DISTRIBUTED SYSTEMS, CONCEPTS AND DESIGN, {By J.DOLLIMORE, T.KINDBERG}
- 2) INTRODUCTION TO DISTRIBUTED ALGORITHMS, {By G.TEL}
- 3) PROGRAMME VERIFICATION, 1991. {By K.R.APTE}
- 4) DISTRIBUTED SYSTEM, ADDISON WESLEY, 1989. {By S.MULLENDER (ED)}
- 5) ET.AL.DISTRIBUTED COMPUTING: CONCEPT AND IMPLEMENTATIONS, {By P.L.MCENTRE}
- 6) DISTRIBUTED COMPUTER SYSTEMS, {By Y. PARKAR (ED)}
- 7) DISTRIBUTED SYSTEMS: ARCHITECTURE AND APPLICATIONS, {By B.W.LAMPSON (ED)}
- 8) FAULT-TOLERANT DISTRIBUTED COMPUTING, {By B.SIMON AND A SPECTOR (EDS)}
- 9) RESEARCH PAPER FROM SOME CURRENT JOURNALS.

## 705: (ELECTIVE PAPER-I) ARTIFICIAL INTELLIGENCE

Overview of Artificial Intelligence. Formalized Symbolic Logic Rule Based Dedication & Expert Systems, Languages For AI Problem Solving, Structured Knowledge Representation, Searching and Matching, Expert System Architecture & Tools, Natural Language Processing, Learning Systems

• **TEXT/REFERENCE BOOK(S) :-**

- 1) Artificial Intelligence, {By Rich E.}
- 2) A Guide to Expert Systems, {By Waterman}
- 3) Developing Knowledge - Based Systems Using an Expert Systems Shell, {By Mockler, R.J.}
- 4) Expert System, Applications in Engineering and Manufacturing, {By Badiran, A.B}

## 706: (ELECTIVE PAPER-II) INTERNET ENGINEERING

Internet protocol model overview, addresses, Internet protocol, Transport Layer, Upper Layer Protocols, Internet Access, Internet Applications. Internet Routing, Latest development in Router technology, Overview of HTML & HTTP, Web Servers, Web Access and Security, Related Web capabilities, WWW proxies.

HTML Technology, tools and guides, Introduction to VRML and JAVA languages, Web objects.

Browser features capabilities, Netscape and Mosaic, Microsoft Internet Explorer Latest Web Browsers, Application of Browsers for commercial gain.

Business through websites, website connection types, web services, security issues, management issues, extension and applications on web. Online-services technology.

Virtual Reality: introduction and applications on Internet.

• **TEXT/REFERENCE BOOK(S) :-**

- 1) Internet and Intranet Engineering {By Daniel Minoli}
- 2) The Internet {By Christian Crumlish}
- 3) Teach You the Internet in a Week {By Neil Randall}



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## B.E. YEAR IV-- SEMESTER VIII

### (Industrial Training)

#### Project and Seminar:

Industry based Project and Seminar for 16 weeks plus 2 weeks in The Institute at the end. Total 18 weeks.

#### Points to be noted:

- 1: Teacher should be sent to the industry for interaction with industrial guide.
- 2: Project work and progress may evaluated through seminars at the regular intervals.
- 3: Industry persons may be invited during presentation.
- 4: Project can be taken up at the Institute in consultation with the industry.

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