

9. RESOURCE REQUIREMENT

Three basic resources required for any programme to run are: physical, human and financial. The human and physical resources requirements are calculated as:

9.1 Physical Resources

Space Requirement:

Norms and standards laid down by All India Council for Technical Education (AICTE) may be followed to work out space requirement in respect of class rooms, tutorial rooms, drawing halls, laboratories, space required for faculty, student amenities and residential area for staff and students.

	Unit Area (Sq.m)	Qty	Total Area (Sq.m)
Class rooms	75	2	150
Digital and Microprocessors Laboratory	90	1	90
Computer Centre	100	1	100
Office space	50	1	50
Faculty rooms	20	8	160
Store Section	50	1	50
Maintenance Section	50	1	50
Total			650

Laboratories/Computer Centre

<u>Laboratory/Computer Centre</u>	<u>Estimated Cost</u>
Digital and Microprocessors Laboratory	5 lacs
Computer Centre	15 lacs

List of Equipment

Sr. No.	Particulars	Qty	Estimated Cost
HARDWARE			
1.	Novell Network Environment		
	a) Server Processor :Pentium IV 2.6 GHz or above; Bus: PCI/EISA; Memory:132 MB; HDD:4 GB; FDD: 1.4 MB; Display:SVGA Colour monitor 14"; CD: 24xCD; Network card: 16/32 bit	1 No	
	b) Nodes Processor: Pentium IV; Speed: 2.6 GHz; Bus: ISA/PCI; Memory: 32 MB; HDD: 1.2 GB; FDD: 1.44 MB; Display: SVGA Colour monitor; Network card: 16/32 Ethernet card	10 Nos	
2.	Multuser (Unix) Environment		
	c) Server Processor: PentiumIV, 2.6 GHz or above; Bus: PCI/EISA; Memory: 32 MB and above; HDD: 12 GB; FDD: 1.4 MB; Display:SVGA Colour monitor; CD: 24"; Network card: 16/32 bit	1 No	
	d) Diskless Nodes IBM PC AT 486	10 Nos	
3.	Printers	7 Nos	
	- 300 cpc, 24 pin 4		
	- Laser jet Printer 5		
	- Inkjet Printers with colour option 4		
SOFTWARE			
1.	Novell Network 4.1 version or higher		
2.	Windows 98.2000, XP		
3.	MS Dos 6.22 or higher		
4.	Turbo C++		
5.	Auto CAD and Or CAD		
6.	MS Office/Perfect office		
7.	SCO Unix with complete development system		
8.	Corel Draw/Popular Application packages		
9.	Spice		
10.	Oracle, Developer 2000		
	COST OF COMPONENTS Components cables, and connectors, computer stationery, printer consumables (Ribbon, inks)	LS	2,00,000/-

Additional Requirements in the light of Revised Curriculum			
1.	Computer Server P-IV – 2.6 GHz, 9.0 Gb Ultrawide SCSI – Hard disk RAM 256 MB Extendable to 384 MB or more with ECC SDRAM/EC EDO RAM Cache: 512 KB L2 Cache; SMPS: 333 W; Hard Disk: 9.0 GB (Min) PCI Ultra wide SCSI hard disk with PCI Ultrawide SCSI controller of type II/III; Drives: FDD 3.5" – 1.44 MB; 16x/24x SCSI based CD-ROM drive; Keyboard: 104 keys, Mouse: Serial mouse with pad on PS2 port; Monitor: 15" colour SVGA digital, Resolution 1024 x 768 pixels (min); Modem: 56KBPS (min)External	1	2,00,000/-
2.	Pentium IV Workstations for Windows: RAM 128 Mb, Cache 32 KB Internal Cache (LI) and 512 KB L2 Cache; Hard disk 4.0 MB (Min) Unltra wide SCSI; Drives – 1 FDD 3.5" – 1.44 MB; 2.48* CDROM; Keyboard – 104 key; Bus PCI/ISA; Network Card – 32 bit with UTPport; Display PCI 64 Bit Graphics Controller with 4 MB RAM	40	1,50,000/-
3.	Computer Server Unix Based P-IV 2.6 GHz: RAM 256 MB Extendable to 384 MB or more with ECC SDRAM/EC EDO RAM Cache: 512 KB L2 Cache; SMPS: 300 W; Hard Disk: RAID LEVEL 5 SCSI 18 GB GB (Min) PCI Ultra wide SCSI hard disk with PCI Ultrawide SCSI controller of type II/III; Drives: FDD 3.5" – 1.44 MB; 16x/24x SCSI based CD-ROM drive; Keyboard: 104 keys, Mouse: Serial mouse with pad on PS2 port; Monitor: 15" colour SVGA digital, Resolution 1024 x 768 pixels (min); Modem: 56KBPS (min)External	1	3,00,000/-
4.	Unix Nodes	15	30,000/-
5.	Adapter: Ethernet: IEEE 802.3 10BASE-T; PCI Local burs 2.0 specifications; Network Data Transfer Rate; Fast Ethernet – 100 Mbps; Ethernet: 10 Mbps	4	2,500/-
6.	Hub: Standard Fast Ethernet: HEEE 802, 3u 100 BASE – TX, Class II, repeater; Topology – Star; Protocol – CSMA/CD; Network Data Transfer Rate; Fast Ethernet: 100 Mbps; Ethernet – 10 Mbps	4	15,000/-
7.	Connectors and Cables: BNC (M) Metal Screw Type BNC(T) connector Terminator 50 Ohms	100 connectors 500 mm	40/- and 100/- per connector
8.	Colour Scanner: Max. Resolution: 2400 x 2400 DPI; Optical Resolution – 600 x 600 DPI; Colour depth – 24 bit; Scanning area – 8.5" x 14.0"; Interface – SCSI dedicated; Colour Scanning – Single Pass; Method Associated Drivers and Software	1	13,00,000/-

Sr. No.	Particulars	Qty	Estimated Cost
9.	Colour Laser Printer: Phaser 840 with internal 2GB Hard Disk Drive; Resolution – 1200 dpi; page size A4, US letter; RAM – 64 MB; Processor – 133 MHZ;Media Type – Plain paper (60 to 216 gsm); transparencies; labels; Card Stock – envelopes; Duplex Printing – Automatic and manual; Interfaces – 100 BASE T10BASE2 Ethernet; Solik Ink Cartridges	1	80,000/-
10.	Notebook Computer: CPU – Intel Pentium II 2.6 GHz (1.8 V) (MMO); Package: PGA or MMO; Memor – 32 MB on board, Max. 128 MB 3.3 Syn DRAM, Support 2 expansion DIMM sockets; Cache – 256/512 KB Synhchronous 1.2 cache; Display – PCI local bus 3D graphic accelerator – Dual 2MB video memory SGRAM, expandable to 4 MB, Support dual-view, 14.1" XGA TFT, 256 K colors; BIOS: 256 K Flash ROM BIOS, Support PnP Execution, APM 1.2 and ACPI; Hard Drive: support bus master, ultra; Floppy drive – Removable 3.5", 1.44 MB; Audio system – support 3D audio, Built in speakers and microphones; PC card – PC card 3.0 standard complaint, support two type II or type III; Keyboard – US 86 keys; I/O interface – one 16 C 550 compatible serial port, one EPP/ECP complaint parallel port, One extended PS/2 connector, One USB port, One 176 pin PCI local bus Ducking Station connector; Pointing device – built in PS/2 interface Trackpad module; Standard Accessories	1	1,20,000/-
11.	Modem: Chipset – Rockwell; DVDS – Yes; Caller ID- yes; Voice mode Enhanced ADPCM compression/decompression Tone; Detection/generation and call discrimination* Concurrent DTMF detection Speaker phone* Acpustic and line echo cancellation* Programmable microphone, speakerphone* Aaoustic and line echo cancellation* Programmable microphone AGC* Microphone volue selection and muting* Speaker volume control and muting PNP Features: PNP and Non Pnp mode support; standard ITU TV 34 Annex 12v 34v 32 bits v. 17; Error correction – MNP class 2-4 and ITU TV. 42; Data compression MNP 5 and ITU Tv. 42; Data speed 53300, 52000, 5000, 48000, 46000, 44000, 40000, 38000, 36000, 34000, 33600, 32000, 31200, 28800, 26400, 24000, 21600, 19200,14400, 12000, 9600, 7200 bps; Fax class group 3 (class I); Dialing type – tone or pulse; COM Port and IRQ: COM 1,2,3 and IrQ 3, 4, 5, 7; Package wotj: 1 installation Guide, 1 cyeyenne SW CD for Ein 95 and NT (rev)	1	8,000/-
12.	UPS of 10 KVA rating: Input – 160 V – 260 V, 50 Hz AC, Single Phase; Output – 230 V+/- 1 % from no load to full load; O/P frequency – 50 +/-2.5 Hz; Backup time 1 Hr. (minimum); Protections should be available; Monitoring by analog meters	3	50,000/-

Sr. No.	Particulars	Qty	Estimated Cost
13.	Router: Latestest version or equivalent having following specifications: Input voltage – 200 – 240 V AC, 50 Hz; Current 1.0 to 0.5 amps; Processor minimum 20Hz Motorola 68 EC 030; Network interface – 1 Ethernet, 2 synchronous serial and 1 BRI; Ethernet interface – Ethernet attachment unit (AUI) IEEE 802.3; Synchronous serial interface-RS-232, RS-449, V 35, X.21 (NRZ/NRZI and DTE mode), All serial interfaces use the DB 60 connector at the chassis; BRI – ISDN Basic Rate S/T(RJ.45); Memory configurations – capacity primary memory(DRAM SIMMs) 1MB (expandable), shared packet memory 1 MB (DRAM on board); System code memory 4 MB (Expandable)(Flash or PROMs), Boot (ROM) 1 MB; Non volatile RAM(NVRAM) 32 KB; Accessories – Suitable cables and connectors for connectingAUI and the serial interfaces with existing LAN.	1	2,00,000/-
14.	Compact Disk Recordable: 74 minute/650 Mb capacity	10	100/- each
15.	UPS of 5 KVA rating: Input – 160 V – 260 V, 50 Hz AC, single phase; Output: 230 V +/- 1 % from no load to fullload; O/P frequency: 50+/-2.5 Hz; Backup time 1 Hr. (Minimum); Protections shouldbe available; Monitoring by analog meters	2	30,000/-
16.	Plotter: Categories Fast track 1300; Max. Maerial Width – 52” roll/56 sheet; Max cutting width; Max. cutting area (repeatable) 47.2”*39”; Max. addressable Cut length 164 feet; Max. Media thickness 0.04”; Cutting speed (axial) 39 ips; Acceleration knife UP/Down – 4G (Pen up), 3 G (Pen Down); Knife Up Down cicles – 40/sec; Adjustable knife pressure 0.5 oz – 17.6 oz; Interfaces (standard RS 232 C Parallel); Input Buffer – 1MB, stand standard	1	75,000/-
17.	Digital Camera: Resolution 1528*1146 Pixcls 1 NO. for 16.5*12 Amm area; Principal – Digital 3 CCD camera; Lens multiplication 2; Exposure: Autofocus, auto, aperture, auto shutter; Sensitivity – 800 ASA; Shutter speed – 1/2000 – ½ sec; Image Format – Raw data (1.2 MB), Expanded to 5 MB.PICT or TIFF format Battery – Lithium; IN/OUT – SCSI-II with cable for direct readout/capture	1	35,000/-
18.	External Hard Disk: 9 GB – Hard Disk external 3.5” Ultra Wide SCSI; Capacity – 9.0 GB; Form factor – 3.5; Seek time – 6.3 cm; Buffer size 1 MB; Transfer rate – 40 MB/s; Rotation speed – 10000 RPM; Interface –Wide Ultra SCSI; No. of heads – 12; No. of disks – 6; H*W*L – 41*102*147 mm, weight 870 g; Operating temperature 5 to 50 deg centigrade, Non Op. Temp – 40 to 65 deg. Centigrade	4	12,000/-
19.	Ethernet Remote Access: Routing – Novell IPX with RIP, SAP, ICP/IP with RIP, static routes; Bridging – Transparent MAC – Layer Bridging, IEEE 802, ID spanning tree; WAN protocols – standard PPP, multilink PPP; WAN interfaces – PCMCIA – Type I,	1	1,50,000/-

Sr. No.	Particulars	Qty	Estimated Cost
	II; Serial: Sumiature D – 26 high density connector; Sync/ Serialcable – auto senting for EIA-232, EIA-530, V.35; Wen speeds: PCMCIA: async upto 115, 200 bps; ISDN DRI – upto 128,000 bps; Management – Windows based configuration, safety – UI, 1950, Emission – FCC Class B, Requirement for configuration; IBM – compatible PC*See Name of the Pentium Workstation –P-III Mhz		
20.	CAD Workstations: RAM 128 MB, Processor: P-IV Xeon 2.6 GHz, cache –32KB internal cache (LI) and 512 KB 1.2 Cache; Hard disk 4.0 GB (min) Ultra wide SCSI; Drives (1) FDD 3.5” – 1.44 MB, (2) 48 X CD – ROM (Min); Keyboard – 104 key enhanced Win-95 type; Mouse – serial mouse with pad on PS/2 port; Bus-PCI/ISA; Network card – 32 bit with UIP post; Display – PCI 64 bit Graphics Controller with 4 MB RAM; Monitor 20” (19”V) High resolution Colour Monitor; CRI size/type: Inver mask, dynamic focus; Display size – 365*270 mm normal, 386*280 mm full screen; display colour – unlimited colour; CRT Pitch – 28 mm dot; CRT faceplate – AR-ASC(anti reflection – anti static charge) coating; Resolution – 640*480 (60 – 75 Hz); 1024*768(60-77)Hz; Plug/Play – VESA DDC – 2AB; Audio card – 32 bit sound blaster pro; Compatible system with speaker and power amplifiers – 160 W(min), Microphone and Headphone; S/W Drivers for ADD –On cards such as network, graphics display, sound	15	1.50,000/-
21.	Ethernet Print Servers: Ethernet Standard: IEEE 802.3 10 Base-T 10 Base 2; Interface – 1BNC, 1 RJ – 45 UTP; Frame types – Ethernet II, IEEE 802.3; Protocols – IP, IPX/SPX (DE – 960); LAN Buffer – 32 KB (DE – 960); Print File Buffer – 128 KB (DE-960), 32 KB (DE-950); Input Power: 12 V DC	1	25,000/-
22.	V-Sat Station: RF Suybsystem – ku-band; Antenna Diameters (meters) 1.2/1.8/ 2.4; RX gain db 41.5/45.0/47.5; TX gain db – 42.9/46.5/49.2; System G/T- 21.5/25.0/27.5; System Noise temperature – 100; Transmit Power (1db compression, 12 – watts; 12 db adjustment range – 2/4/8/10; Frequency Adjustment – Full band agility on transmit and receive with resolution, can be changed centrally using the NMCS; A control station may be identical to a remote as far as antenna character concerned; Communication: User ports; voice: 8 Kbps near toll quality, 16 Kbps optional; Fax 9.6 Kbps G3 facsimile, 14.4 Kbps optional; data – Asynchronous 50 bps to 19.3 Kbps; Synchronous 1200 bps to 64 Kbps; Port apperances – PSIN RJII, 2 w, PDN RS 232 C upto 30.4 Kbps; Modem; Modulation Type – QPSK	1	2,00,000/-
23.	Photocopier Compatible with Computer System: Colour Photo-copier	1	1,50,000/-

Sr. No.	Particulars	Qty	Estimated Cost
24.	LCD Projector	1	1,05,000/-
25.	MPEG Optibase Moviemaker Xpress and Plus: Standard compliance – ISO/IEC 11172 (MPEG-1); I/P-Signal; Video Input – NISC and Pal Composite Video (BNC) S-Video (mini-Din) Digital prefiltering; Audio input – unbalanced analog stereo line input, input impedance 600, Frequency response – 2011z – 20 Khz; Video Preview Output – Composite Video (BNC); NTSC Video – SIF 352*240 pixels; PAL video – SIF 352*288 pixels; Audio Bit rates – 32 – 384 Kbit/s; Power consumption – 10.5 W (2.1 A); Physical Size – Full PCI Slot 312 mm*10.67 mm, 12.28 in*4.2 in; Installation Plug and Play, software included – MPEG Compsoer Starter	1	2,00,000/-
26.	Pentium Based Video Conferencing System: 240 code; Computer card used to compress the outgoing video signal and decompress the incoming video signal; V 35 – Computer card used to send V.35 or RS 449 signal 29" SVGA color monitor; Pan/Tilt/Zoom Camera: PC Pentium-III 500 – PC's include CD – ROM, 4GIG IID, 64 MB RAM	1	2,00,000/-
27.	DIP Workstation: RAM – 128 MB; CPU – P III 450 Mhz; Cache – 32kb Internal Cache (1.1); Hard disk – 4.0 GB(Min) - SCSI, FDD – 1.44 MB, 48X-CD-ROM		
28.	Multimedia Tools – Software	1	1,20,000/-
29.	Oracle Work Group Server – Software	1	4,00,000/-
30.	Authorware 4.0 or Latest Commercial Version – Software	1	1,80,000/-
31.	Auto CAD 14.0 or latest version – software	1	90,000/-
32.	Coral Draw 8.0 latest version – software	1	40,000/-
33.	Macromedia of Director 6.0 or latest version – software	1	50,000/-
34.	Antivirus Dr. Solomn – software	1	5,000/-
35.	Developer 2000 with documentation (latest version) – software	1	50,000/-
36.	Designer 2000 with documentation (latest version) – software	1	1,00,000/-
37.	Java for Internet Environment (latest version) – software	1	20,000/-
38.	CAD/CAM Software IDEAS Artisan Series (latest version) – software	1	20,000/-
39.	Novel Netware – software 10 users	1	80,000/-
40.	Windows, 2000 – software	1	2,000/-
41.	MS DOS 6.22 – software	1	20,000/-
42.	MS Office 2000 – software	1	20,000/-
43.	Page Maker – software	1	5,000/-
44.	Compiler TURBO C, C++ - software	1	10,000/-
45.	SCO Unix – software 15 users	1	80,000/-
46.	Multimedia Authoring – software	1	Cost verify at the time of purchase

Sr. No.	Particulars	Qty	Estimated Cost
47.	Windo NT – software 20 users	1	40,000/-
48.	Apparell Design – software	1	20,000/-
49.	Textile Design – Software	1	20,000/-
50.	Photo shop – software	1	35,000/-
51.	Nodes: Processor – Pentium 133 MHz or above; Bus PCI/EISA Memor 324 B and above; HDD 126 B; FDD 1.44 MB; Display – SVGA color monitor; CD - 24 x; Network card – 16/32 Ethernet Card	10	
52.	Diskless Modes – 1BM PC AT/486	10	
53.	Printers: 300 cps 24 lines (4 nos); Laserjet Printer (1 No); Inkjet Printer with colour option (2 Nos)		

NOTE:

In addition to above laboratories, computer centre will be required for effective implementation of the course. Provision for overhead projector, TV with VCR facility slide cum strip projector, TV with VCR facility slide cum strip projector, LCD projection System, photocopier, PC-XT facilities, drafting machines etc has also to be made.

Furniture Requirement

Norms and standards laid down by AICTE be followed for working out furniture requirement for this course.

- Furniture for laboratories	3.5 lacs
- Furniture for Computer Centre	2.0 lacs
- Cost of Air Conditioners	3.0 lacs

8.2 Human Resources

Weekly work schedule, annual work schedule, student teacher ratio for various group and class size, staffing pattern, work load norms, qualifications, experience and job description of teaching staff workshop staff and other administrative and supporting staff be worked out as per norms and standards laid down by the AICTE

Faculty Requirement:

It is calculated base on contact hours in theory classes and practical classes. Keeping in view student teacher ratio as 11:1, following faculty strength is required.

Sr. No	Subject	year			Total
		I	II	III	
1.	Communication skills	1	-	-	1
2.	Mathematics	1	-	-	1
3.	Electrical Engineering	-	1	-	1
4.	*Electronics Engineering	-	1	-	1
5.	*Technology Subjects	1	2	4	7
Total		4	3	4	11

Note: Seven positions out of 11 are in the area of electronics, computer engineering. Out of these four positions may be filled with persons holding qualification of B.Tech./M.Tech in Computer Science and Engineering. Two positions may be filled with persons having qualifications B.Tech in Computer Science or MCA. One position may be filled with a person who has diploma in computer engineering and having five years experience of installation and maintenance of computers. He will be working as Maintenance Engineer and will also take up teaching subjects like Digital Board Testing, Installation and Maintenance of Computer besides in-house maintenance. He will be treated as lecturer for all purposes.

Following are the qualifications and experience for the teaching faculty and technician staff

Qualification	Experience
<u>Lecturer in Computer Science and Engineering</u> BE in Computer Science and Engineering OR MCA	2 years experience in teaching/industry/research
<u>Lecturer in Electronics</u> BE in Electronics and Communication Engineering	2 years experience in teaching/industry/research
<u>Sr.Lecturer</u> BE in Computer Science and Engineering OR MCA	5 years experience in teaching/industry/research at the level of Lecturer or equivalent
<u>Head of Department</u> ME in Computer Science and Engineering OR MCA	5 years experience in teaching/industry/research at the level of Lecturer or equivalent
OR BE in Computer Science and Engineering OR MCA	7 years experience in teaching/industry/research at the level of Lecturer or equivalent
<u>Programmer</u> BE in Computer Science and Engineering OR MCA/ MSc with PGDCA	2 years practical experiences in teaching/ industry/research at appropriate level
<u>Jr. Programmer</u> Diploma in Computer Engineering OR BCA	2 years practical experiences in teaching/ industry/research at appropriate level

In addition to above, following support staff will be required:

- 1) Supporting Staff
- 2) Technicians for laboratories 4 Nos.
- 3) Office Assistants 1 No.
- 4) Steno/Computer Operator 2 Nos.
- 5) Laboratory Attendants 2 Nos.

8.3 Financial Resources

Recurring Expenditure

1.	Salaries	Rs. 28.00 lacs/year
2.	Consumables Computer centre	Rs. 0.40 lacs
	- Computer engineering and Microprocessor Laboratories (ICs, cables, connectors, solders)	Rs. 0.60 lacs
	- PCB Laboratory	Rs. 0.30 lacs
3.	Maintenance and spares	Rs. 2.5 lacs/year
4.	Updating and replacing equipment	Rs. 3.0 lacs/year
5.	Others	
	- Journals	Rs. 0.20
	- Books	Rs. 0.30
	- Software	Rs. 0.20
	- Films and CAI	Rs. 0.20
6.	Office Expenses	
	- Stationary etc	Rs. 0.20
	- Traveling expenses Including Training	Rs. 1.00

8.4 Information Resources (per year)

Library Books	Rs. 2.00 lacs
CAL Software, Video Films	Rs. 2.00 lacs
Manuals for laboratories	Rs. 1.00 lac

10. RECOMMENDATIONS FOR EFFECTIVE IMPLEMENTATION OF CURRICULUM FOR DIPLOMA PROGRAMME IN COMPUTER ENGINEERING

The workshop group strongly recommended following for effective implementation of curriculum.

- a) While imparting instructions, stress should be laid on the development of practical skills in the students.
- b) Field visits be organized as and when required to clarify the concepts, principles and practices involved. For this purpose, time has already been provided under student centered activities.
- c) Extension lectures from professionals should be organized to impart instructions specialized areas.
- d) Emphasis on practical work, workshop practice and troubleshooting of computers be given
- e) There is no need of purchasing very costly equipment. Efforts may be made to establish linkages with local field organizations for resource sharing.
- f) Considerable stress should be laid in developing communication managerial and entrepreneurial skills and abilities.
- g) Teachers should generate competitiveness among the students for the development of professional skills.
- h) Hobby clubs and other co-curricular activities be promoted to develop creativity in the students.
- i) Teachers should be sent for training in the new areas incorporated in their curriculum
- j) Students should be given well thought out project assignments. This can help students in developing creativity and confidence in them for gainful employment (wage and self)
- k) A **project bank** should be developed by the Computer Engineering Departments of various polytechnics in consultation with field organizations/industry etc. For this State Board of Technical Education, Haryana should take initiative
- l) A question bank and list of books in the area of Computer and related field may be prepared at the Board level

11. LIST OF EXPERTS

The following experts participated/contributed in the revision of curriculum for diploma programme in **Computer Engineering and Information Technology** during the workshop for revision of subjects of first year for Haryana state held on May, 2003 at National Institute of Technical Teachers' Training and Research, Chandigarh.

From Polytechnics	
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1.	Shri Piyush Gupta, Consultant, MGSIPA, Punjab, Sector 26 Chandigarh
2.	Shri Jarnail Singh, Deputy Director, PSEB, Phase VIII, Mohali

From NITTTR, Chandigarh	
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3.	Mrs Ekta Bhullar, Lecturer, Computer Science Department
4.	Mrs Maitreyee Datta, System Programmer, Computer Science Department
5.	Shri TN Thukral, Faculty, Curriculum Development Centre (Coordinator)

The following experts participated/contributed in the revision of curriculum for diploma programme in **Computer Engineering and Information Technology** during the workshop for revision of complete Curriculum for Haryana state held from 29 – 11 October, 2003 at National Institute of Technical Teachers' Training and Research, Chandigarh.

From Field/Industries/Institutions of Higher Learning	
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6.	Shri Rohit Singla, Additional Director, DIOACC (RCC), Chandigarh
7.	Ms. M Syamala Devi, Chairperson, Dept of Computer Science, Punjab University, Sector 14, Chandigarh
8.	Shri Sanjiv Sofat, Assistant Professor, Dept of Computer Science, Punjab Engineering College, Sector 12, Chandigarh
9.	Ms. Sudarshan Arora, Member Professional and Vice President, Quarks Ltd, Mohali
10.	Ms. Mridula Gautam, Asstt. Manager, Training, IDS Infotech, Sector 26, Chandigarh

From Polytechnics	
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11.	Shri Parveen Kadian, Lecturer, Computer Engineering, CR Polytechnic, Rohtak
12.	Shri Joginder Singh, HOD, Computer Engineering, KCGPW, Ambala City
13.	Shri Mahender Singh, Lecturer, Computer Engineering, Govt. Polytechnic, Nilokheri
14.	Shri Harinder K Singh, Lecturer, Information Technology, SJP Polytechnic, Damla
15.	Shri Sanjay Sehgal, Sr. Lecturer, Computer Engineering, SJP Polytechnic, Damla
17.	Shri Sunil Sharma, Lecturer, Computer Engineering, Govt. Polytechnic, Uttawar (Haryana)
18.	Shri Arun Kapil, Lecturer, Computer Engineering, SJP Polytechnic, Damla

19.	Sh Rajesh Kumar, Sr Lecturer, Electronics and Communication Engineering Department
20.	Dr. KM Rastogi, Professor and Head, Curriculum Development Centre
21.	Ms. Shano Solanki, Lecturer, Computer Science, Department
22.	Shri TN Thukral, Faculty, Curriculum Development Centre (Coordinator)

The following experts participated/contributed in the re- revision of curriculum for diploma programme in **Computer Engineering and Information Technology** in the light of inclusion of the subject of Chemistry in first year, thereby changing of whole study scheme for Haryana state held on 2nd April, 2004 at National Institute of Technical Teachers' Training and Research, Chandigarh.

From Polytechnics	
23.	Shri Parveen Kadian, Lecturer, Computer Engineering, CR Polytechnic, Rohtak
24.	Shri Haridev Singh, Lecturer, Information Technology, SJP Polytechnic, Damla
25.	Shri Joginder Singh, HOD, Computer Engineering, KCGPW, Ambala City
26.	Shri Sudeep Kumar, Lecturer, Computer Engineering, GPW, Faridabad
27.	Shri KS Jamwal, HOD (Electronics), Govt. Polytechnic, Nilokheri
28.	Shri Rajiv Thakur, Expert in Computer Science and Engineering
From NITTTR, Chandigarh	
29.	Shri TN Thukral, Faculty, Curriculum Development Centre (Coordinator)