NATIONAL BOARD FOR TECHNICAL EDUCATION, KADUNA

NATIONAL INNOVATION DIPLOMA (NID)

IN

COMPUTER HARDWARE ENGINEERING TECHNOLOGY

CURRICULUM AND COURSE SPECIFICATIONS
PLOT 'B' BIDA ROAD, P.M.B. 2239, KADUNA-NIGERIA

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GENERAL INFORMATION

Programme Nomenclature:

National Innovation Diploma Programme in Computer Hardware Engineering Technology

Goal: To impart the necessary skills leading to the acquisition of skilled, enterprising and self-reliant personnel in Computer Hardware Engineering Technology.

Objectives: A product of National Innovation Diploma programme in Computer Hardware Engineering Technology should be able to:

- 1. Operate and maintain basic Operating Systems (DOS & Windows)
- 2. Understand the computer environment and acquire the skills needed to identify and optimize memory and computer configuration.
- 3. Start and manage computer-based businesses
- 4 Carry out routine (preventive) maintenance of Computer systems
- 5. Be able to assemble and install micro computers.
- 6. Partition and format disks and load files
- 7. Install window NT\200x in a multi-boot configuration.
- 6. Partition and format disks and load files
- 8. Install and uninstall software
- 9. Detect technical faults in a Micro Computer
- 10 Setup and troubleshoot basic Network in LAN

Entry Qualifications

- i. S.S.C.E or its equivalent. Credit passes in Physics, Chemistry, Mathematics, English language and any other one from Metal works, Technical Drawing, Basic Electronics, Biology or Agricultural Science, Geography, and Further Mathematics.
- ii. The National Vocational Certificate {NVC} or National Technical Certificate {NTC} with credit passes in the trade modules and five academic subjects relevant to the programme and at least a pass in English language.

NATIONAL CERTIFICATION

Trainees who successfully complete all the courses/modules specified in the curriculum table and pass the national examinations in the trade will be awarded the following certification:

A National Innovation/Computer Diploma in Computer Hardware Engineering.

Note: This programme is expected to be in form of term/session-based training courses of not less than two years for full time and three for part-time.

ACCREDITATION

- 1. The programme shall be accredited by the National Board for Technical Education before the candidates can be awarded the National Innovation Diploma in Computer Hardware Engineering Technology (NID).
- 2. Details about the process of accrediting the programme for the award of the NID can be obtained from the Executive Secretary, National Board for Technical Education, Plot "B", Bida Road, P.M.B. 2239, Kaduna, Nigeria

GUIDANCE NOTES FOR TEACHERS

- 1. The new curriculum is drawn in unit courses and modules.
- 2. In designing the units, the principle of the modular system has been adopted, thus making each of the professional modules, if completed, enough to provide the student with operative skills, which can be used for employment purposes or otherwise.
- 3. Institutions may, as required, add courses to the minimum guide curriculum
- 4. The teaching of the theory and practical works should, as much as possible, be integrated. Practical exercises, especially those in professional courses and laboratory work should not be taught in isolation from the theory. For each course, there should be a balance of theory to practical works in the ratio of 30:70

CURRICULUM STRUCTURE

The curriculum of all NID programme consist of main components. These are:

- 1. General studies/education
- 2. Foundation Courses
- 3. Professional Courses
- 4. Supervised Industrial/practical work scheme.

THE THEORY: This aspect consists of the general studies/education, the foundation and the professional courses which shall account for a minimum of 30% of the total contact hours for the programme.

SUPERVISED INDUSTRIAL/ PRACTICAL WORK SCHEME are courses, which give the student the theory and practical skills needed to practice the field of calling at the technical level. The component shall account for a minimum of 70% of the total contact hours for the programme.

NID Programme Duration

- 1. Four semesters of two years full-Time.
- 2. Six semesters of three years- Part-Time
- 3. 8 hours per day or 40 hours per week
- 4. 18 weeks per semester(one week for registration and one for examination)

ASSESSMENT PROFILE:

Practical Only

- 1. Practical 100%
- 2. Test 10%
- 3. Examination 40%
- 4. Course work 10%

Theory Only
1. Examination 60% 2. Course work 20% 3. Test 20%

Theory and Practical

1. Examination 40% 2. Test 20% 3. Course work 20% 4 Practical 20%

CURRICULUM TABLE FOR NID IN COMPUTER HARDWARE ENGINEERING

1st SEMESTER NID Computer Hardware Engineering

S/N	Course Code	Course Title	L	T	P	CU	СН	Prerequisite
1	CSK 501	Basis of Communication	2	-	-	2	2	
2	MAT 112	Logic and Linear Algebra	2	-	-	2	2	
3	CHT 101	Basic Electricity	2	-	2	4	4	
4	CHT 111	Operating Systems	2	-	4	6	6	
5	CHT 112	Computer Workshop and Practice 1	2		4	6	6	
6	CHT 113	Basic Electronics	2		4	6	6	
	TOTAL		12		14	26	26	

2nd Semester NID Computer Hardware Engineering

S/N	Course Code	Course Title	L	T	P	CU CH	Prerequisite
1	CSK 502	Communication Skills 11	2	_		2 2	
2	MAT232	Calculus	2	_		$\begin{array}{cccc} 2 & 2 \\ 2 & 2 \end{array}$	
3	EDP II1	Introduction To Entrepreneurship	2	-		2 2	
4	CHT 121	Digital Electronics	2	-	4	6 6	
5	CHT 122	System Architecture 1	2		4	6 6	
6	CHT 123	Introduction to Micro Computer and Application Packages	2		2	4 4	
	TOTAL		12		10	22 22	

Keys: $L \rightarrow Lecture hours$

 $T \rightarrow Tutorials$

 $P \longrightarrow Practical$

 $CU \rightarrow Course Unit$

 $CH \rightarrow Course Hours (Weight & GPA)$

3rd Semester

Industrial Training (3 months)

S/N	Course Code	Course Title	L	T	P	CU	CH Prerequisite
1	CHT 211	PC Assembling and Upgrading	2			6	-
2	CHT 212	System Architecture 11	2			6	
3	CHT 213	Computer workshop practice 11	2	-	4	6	6
4	CHT 214	Basic Networking	2	-	4	6	6
				-			
	TOTAL		8		16	5 24	24

4th Semester

S/N	Course Code	Course Title	L	T	P	CU	CH Prerequisite
1	CHT 225	Consumer Electronics	2	-	4	6	6
2	CHT 221	Troubleshooting and Repairs	2	-	4	6	6
3	CHT 222	Software Installation and Upgrading	2	-	4	6	6
4	EDP 223	Practice of Entrepreneurship	2	-		2	2
5	CHT 224	Project			6	6	6
	TOTAL		8		18	26	26

NOTE: All the general courses are available in there respective programme syllabus for the IEIS.

FIRST YEAR FIRST SEMESTER

PROGRAMME: NID in Hard Ware Engineering

COURSE : Basic Electricity

CODE : CHT 101

DURATION: Hours/Week Theory: 2hrs Practical: 2hrs

UNIT : 4hrs

TOTAL CONTACT HRS: 84

GOAL : This is designed to provide the learner with working knowledge in basic electricity.

GENERAL OBJECTIVE: On completion of this course the learner should be to:

1.1 Understand Basic Electricity

1.2 Understand the uses of Multi Meter1.3 Understand the uses of Megger Tester

1.4 Understand the uses of Basic Electricity kits

PROGR	PROGRAMME: NATIONAL INNOVATION DIPLOMA IN COMPUTER HARDWARE ENGINEERING TECHNOLOGY (NID)										
COURS	SE: Basic Electricity	COURSE	CODE: CHT 10	01 CON	TACT HOURS:	84					
GOAL:	GOAL: This course is designed to provide the learner with working knowledge basic electricity										
COURS	COURSE SPECIFICATION: Theoretical Contents: Practical Contents										
GENER	GENERAL OBJECTIVE 1: UNDERSTAND BASIC ELECTRICITY										
WEEK	SPECIFIC LEARNING	TEACHERS	LEARNING	SPECIFIC LEARNING	TEACHERS	LEARNING					
VVLLIX	OBJECT∎VE	ACTIVITIES	RESOURCES	OBJECT IVE	ACTIVITIES	RESOURCES					
1-3	1.1 Define basic electricity	Explain basic			Demonstrate basic	Chalkboard					
	1.2 Outline the characteristics	electricity	Chalkboard	1.1 Identify various	electricity concept	,Magnetic Board,					
	of basic electricity.	Explain the	Magnetic	voltages as it		Charts.					
	1.3 Define Ohm's law.	characteristics of	Board, charts,	applies to the							
	1.4 Describe the impact of	basic electricity		above. Namely:							
	basic electricity to:	Describe Ohm's		(a) single, &	Explain various						
	(a) current flow	law		(b) three phase.	voltages e.g.						
	(b) voltage and	Describe the		10 77 1	single, three						
	(c) resistance	impact of basic		1.3 Use basic	phases.						
	1.5 Define simple D.C	electricity to:		electricity kits to	ı						
	circuits	(a) current flow		setup simple							
	1.6 State various types of	(b) voltage and (c)		circuits, to							
	energy and their inter-	resistance Explain		determine current f							
4-6	relationship	simple D.C circuits		low, voltage, flow	Demonstrate the						
	1.7 Define the concept of	State various types		voltage, etc.	use of simple						
	magnetism and magnetic circuits	of energy and their inter-relationship		1.4 Identify the	electric circuits to						
	1.8 Define the concept of	Explain the		sources of current flow of	determine current						
	electromagnetism and	concept of		electricity with	flow, voltage, etc.						
	electromagnetic induction	magnetism and		voltage and	now, voltage, etc.						
	1.9 Define the concept of	magnetic circuits		resistance.							
	inductance, capacitance.	Explain the		resistance.							
	Resistance and their	concept of			Show the sources						
	applications.	electromagnetism			of current flow of						
	1.10 State the fundamentals	and			electricity.						
	of A.C theory.				Cicotifolty.						

	1.11 it	Define Kirchoffs law and examine some circuits as relates to Kirchoff's law.	electromagnetic induction Explain the concept of inductance, capacitance resistance and their applications. State the fundamentals of A.C theory. Define Krichoff's law and examine					
			some circuits as it relates to Kirchoff's law.					
GENE	RAL OF	BJECTIVE 2: UNDERSTA	AND THE USES OF M	ULTIMETER				
7-8	2.1	Define a multi-meter.	Explain multi- meter.	Text Books, Diagrams,	2.1	Identify a multi- meter	Demonstrate the use of a multi-	Text Books,
	2.2	State the uses of a multi-meter.	Explain the use of multi-meter.	Charts, white Board and markers	2.2	Use a multi- meter to determine:	meter. Identify a multimeter	Diagrams, Charts, white Board and
	2.3	State the colour codes.	Explain the colour codes.		of	(a) the reading various types of diode(b) the reading	Use a multi-meter to determine: (a) the reading of various types of	markers
					of	various types of resistors	diode (b) the reading of	

]	MD in Computer F	iardware Engine	ering Technology (Drait))	
					various types of resistors	
GENER	AL OBJECTIVE 3: UNDERSTA	ND THE USES OF ME	EGGER TESTER			
9-10	3.1 Define a megger- tester 3.2 Sate the uses of megger meter		Text Books, Diagrams, Charts, white Board and markers	Use transformers to determine how voltage is generated at the secondary windings.		
GENER	RAL OBJECT VE 4: UNDERSTA	ND THE USES OF B	ASIC ELECTRICIT	YKIT	I	
11-13	electricity kit. 4.2 Describe simple D.C circuits. 4.3 Define R-C oscillator	Explain basic electricity kits. Explain simple D.C circuits. Explain R-C oscillator	Text Books, Diagrams, Charts, white Board and markers	Use basic electricity kits to determine the impedance [z] of capacitive, inductive and resistive loads of simple circuits. Use basic electricity kits to setup simple Network, to determine the current flows applying kirchoff's law.	Demonstrate using basic electricity kits to determine the impedance [z] of capacitive, inductive and resistive loads of simple circuits. Demonstrate using basic electricity kits, setup simple Network, to determine the current flows applying kirchoff's law.	Text Books, Diagrams, Charts, white Board and markers
14	REVISION					

PROGRAMME: NID in Hard Ware Engineering

COURSE : Introduction to Operating System.

CODE : CHT 111

DURATION: Hours/Week Theory: 2hrs Practical: 4hrs

UNIT : 6hrs

TOTAL CONTACT HRS: 84

GOAL : This is designed to provide the learner with working knowledge of Operating System.

GENERAL OBJECTIVE: On completion of this course the learner should be able to:

1.1 Understand Operating System

1.2 Understand UNIX Operating System

1.3 Understand the Linux Operating System

1.4 Understand the Windows Operating System

PROGRAMME: NATIONAL INNOVATION DIPLOMA IN COMPUTER HARDWARE ENGINEERING TECHNOLOGY (NID)									
COURS	COURSE: INTRODUCTION TO OPERATING COURSE CODE: CHT 111 CONTACT HOURS: 84 SYSTEM								
GOAL:	GOAL: This course is designed to provide the learner with working knowledge Operating System								
COURS	SE SPECIFICATION: Theoretica	Il Contents:	Practical (Contents					
GENER	RAL OBJECTIVE: UNDERSTAND	THE CONCEPTS		ING OF SCANNERS.					
WEEK	SPECIFIC LEARNING OBJECTIVE	TEACHERS	LEARNING	SPECIFIC LEARNIN		LEARNING			
051155		ACTIVITIES	RESOURCES	OBJECT IVE	ACTIVITIES	RESOURCES			
		ND OPERATING SYS							
1-3	1.1 Define Operating System (O/S)	Explain an Operating	Chalkboard,						
	System (0/3)	System (O/S)	chart magnetic board						
	1.2 List the functions of O/S	System (O/S)	board						
		Give examples of							
	1.3 Describe sequential	O/S							
	processes								
	1.4 5.6	Explain the features							
	1.4 Define concurrent processes	of O/S							
	processes	Explain sequential							
	1.5 Describe processor	Processes							
	management								
		Explain concurrent							
		processes							
		Explain processor							
		management							
		managomom							
GENER	RAL OBJECTIVE 2: UNDERSTAN	ND UNIX OPERATING	SYSTEM	<u> </u>	1	<u>'</u>			
4-6	2.1 Define UNIX O/S	Explain UNIX O/S.		-Install UNIX O/S	Demonstrate the				
	2.2 State the Features of	Outline the		-Investigate Basic UN	IX Installation of				

	tier Hardware Engineering Technology (Drait)
UNIX O/S features of U	INIX commands UNIX O/S
2.3 Describe the processes O/S.	-Create UNIX user Show the basic
of installing UNIX O/S Explain the	account UNIX commands
processes of	Open UNIX user
installing UN	
O/S.	
5, 6.	
GENERAL OBJECTIVE 3: UNDERSTAND LINUX OP	RATING SYSTEM
7-8 3.1 Define Linux o/s. Explain Linu	co/s -Install Linux o/s -Demonstrate the
3.2 State the Features of Linux Outline the	-itemize the Features of Installation of
o/s. Features of	Linux o/s. Linux
3.3 Describe the processes of o/s	-Apply the processes of o/s.
installing Linux o/s. Explain the	Installing Linux o/sState the
processes of	Features of
installing Lir	
o/s.	-Show the
	processes of
	Installing Linux
	o/s.
GENERAL OBJECTIVE 4: UNDERSTAND WINDOWS	
9-10 4.1Describe the features of -Explain the	Install operating system. Demonstrate the
Windows 8 (Multi-tasking, features of	Installation of
Multiprocessing, Security, Windows 8 (Multi- Customize Operating operating system.
Protocols, Supported file system, tasking,	System to suit the
Domain and Workgroup. Multiprocess	ng, environment. Customize
Security, Pro	
Supported fil	
4.2 Describe Windows 8 system, Dom	
versions and Workgro	
(a) Compare and Contrast	Run the O.S. at
(Windows 8	Use the operating system optimal level
Professional, Windows -Explain Win	dows effectively. considering on
2012 Server, 2012 version	board resources.
Advances Servers, and (b) Comp	are

			T English	ing reemiology (Brait)	TT d	
	Windows 2012 Data centre	and			Use the operating	
	Server).	Contrast			system effectively.	
		(Windows				
11-12		8				
	4.3 Describe Microsoft	Professional				
	Management Console	, Windows				
		2012				
	4.4Define the Control Panel	Server,				
	(a) Change system settings	Windows				
	(b) Add/Remove Hardware	2012				
	(c) Add/Remove Software	Advances				
	(d) Display property	Servers, and				
		Windows				
		2012				
		Data				
	4.5Describe Windows 8 disk	centre				
	and storage management	Server).				
	(a) Basic and dynamic					
	storage					
	(b) Managing disks and	-Explain Microsoft				
	volumes	Management				
	(c) Compressing Files and	Console				
	Folders					
	(d) Encryption (Files and	-Define the Control				
	Folders)	Panel				
	ŕ	(e) Change				
		system				
		settings				
	4.6Describe managing Users and	(f) Add/Remov				
	Groups	e Hardware				
	(a) User Accounts in	(g) Add/Remov				
	Windows 8	e Software				
	(b) Creating, deleting,	(h) Display				
	modifying user accounts	property				
	(c) Implementing Groups					

	1	TE III Compater Tia	idware Engineering reclinology (Drait)	
		storage		
		management		
		(e) Basic and		
		dynamic		
		storage		
		[F] .Managing disks		
		and volumes.		
		[g] Compressing		
		Files and Folders		
		[h] Encryption		
		(Files and Folders)		
		[i] Differentiate		
		managing Users		
		and Groups		
		User Accounts in		
		Windows 2012		
		Creating, deleting,		
		modifying user		
		account		
GENER	AL OBJECTIVE 5: KNOW THI	COMPONENTS OF	F OPERATING SYSTEMS	
13	5.1 Define o/s nucleus{kernel}	Explain o/s		
	5.2 Describe the components of	nucleus{kernel}		
	o/s nucleus: Bios dispatcher,	Explain and Itemize		
	Basic I/O system 1/O system	the components of		
	dispatcher etc.	o/s nucleus: Bios		
		dispatcher, Basic		
		I/0 system 1/0		
		system dispatcher		
1.4	REVISION	etc.		
14				

PROGRAMME: NID in Hard Ware Engineering

COURSE : Computer Workshop Practice 1.

CODE : CHT 112

DURATION: Hours/Week Theory: 2hrs Practical: 4hrs

UNIT : 6hrs

TOTAL CONTACT HRS: 84

GOAL : This is designed to enable the trainee maintain Computer System and Accessories

GENERAL OBJECTIVE: On completion of this course the learner should be able to:

- 1.1 Know the various precautions against accidents while in the repair laboratory, and carryout first aid in case of accident
- 1.2 Understand the optimal usage of Computer System and Accessories.
- 1.3 Maintain and repair computer system and its related accessories

PROGRAMME: NATIONAL INNOVATION DIPLOMA IN COMPUTER HARDWARE ENGINEERING TECHNOLOGY (NID)							
COURSE: COMPUTER WORKSHOP PRACTICE I COURSE CODE: CHT 112 CONTACT HOURS: 84							
GOAL: This course is designed to enable the trainee maintain Computer and Accessories.							
COURSE SPECIFICATION: Theoretical Contents: Practical Contents							

GENERAL OBJECTIVE 1: Know the various precautions against accidents while in the Repair lab, and Carryout First Aid in case of accident.

WEEK	SPECIFIC LEARNING	TEACHERS	LEARNING	SPECIFIC LEARNING	TEACHERS	LEARNING
	OBJECTIVE	ACTIVITIES	RESOURCES	OBJECTIVE	ACTIVITIES	RESOURCES
1-4				 1.1: Identify the various tools and equipment in the Computer Repair lab. 1.2: Use various tools and equipment in the Computer Repair lab. 1.3: Operate the tools and equipment in the Computer Repair lab properly. 1.4: Operate safety gadgets and procedure for a Computer Workshop. 1.5: Use the concept of First Aid Box correctly. 	Demonstrate each activity of the Specific Learning Objectives.	Computer Systems, Blowers, IC extractor, set of screw drivers, soldering iron, lead sucker, multi-meter, micro computers, Installation, disks to include Anti virus, scraps of CPU, Mother board, Hard drive, memory, RAM, CD ROM Drive, floppy disk drive, First Aid box.

GENER	GENERAL OBJECTIVE 2: Understand the optimal Usage of Computer System and Computer Accessories.						
5-7	AL OBOLOTEVE Z.	Oridorstal	ia tric optimai osage	or compater of	2.1: Connect the	Demonstrate each	Computer
3-7					Computer System	activity of the	Systems, set
					and accessories	Specific Learning	of screw
					correctly.	Objectives.	drivers,
					2.2: Power the System	Objectives.	Installation,
					to work.		disks to
					2.3: Perform basic		include Anti
					maintenance tasks		
							virus, First Aid box.
					on the computer		DOX.
					system [run anti- virus program]		
CENED	L AL OBJECT I VE 3:	Maintain	Ind repair Computer	System and ita			
8-12	AL OBJECTIVE 3.	Mairitairi a	lila repair computer	System and its i		Explain the various	Blowers, IC
0-12					3.1: Identify the various tools / equipment in	tools in the	extractor, set
					the workshop.		of screw
					the workshop.	Computer Repair	drivers,
					3.2: Diagnose the	shop.	soldering iron,
					Computer System /	Demonstrate each	lead sucker,
					accessories.	practical activity	multimeter,
					3.3 Use available tools	indicated in the	micro
					to rectify the	Specific Learning	computers,
					problem of the	Objectives.	Installation,
					system /	Objectives.	disks to
					accessories		include Anti
					[soldering and de-		virus, scraps
					soldering properly].		of CPU,
					3.4 Apply electrostatics		Mother board,
					and observe how it		Hard drive,
					affects sensitive		memory,
					electronic		RAM, CD ROM
					components.		Drive, floppy
13					3.5 Apply the concept of		disk drive,
10					o.o rippiy the concept of		aion arrvo,

	NID i	n Computer Hardware Engineerin	g Technology (Draft)	
			Colour codes of resistors and capacitors. 3.6 Apply the concept of multi meters. 3.7 Apply simple tests on basic electronic components [fuse, switches, wire, bulb, batteries, short circuits]	First Aid box.
14				

PROGRAMME: NID in Hard Ware Engineering

COURSE : Basic Electronics

CODE: CHT 113

DURATION: Hours/Week Theory: 2hrs Practical: 4hrs

UNIT : 6hrs

TOTAL CONTACT HRS: 84

GOAL : This is designed to enable the trainee have a working knowledge of Basic Electronics

GENERAL OBJECTIVE: On completion of this course the learner should be able to:

1.1 Understand the concept of basic electronics.

1.2 Understand diodes technology

1.3 Understand power supplies concept { half wave and full wave}

PROGRAMME: NATIONAL INNOVATION DIPLOMA IN COMPUTER HARDWARE ENGINEERING TECHNOLOGY (NID)						
COURS	E: BASIC ELECTRONICS	COURSE	CODE: CHT 1	13 CON	ITACT HOURS:	84
GOAL:	This course is designed	to provide the lea	rner with workir	ng knowledge OF Basic	Electronics	
COURS	E SPECIFICATION: Theoretic	al Contents:	Practical (Contents		
			•			
GENER	RAL OBJECTIVES 1.1 Understa	and the concept o	f basic electroni	CS		
WEEK	SPECIFIC LEARNING	TEACHERS	LEARNING	SPECIFIC LEARNING	TEACHERS	LEARNING
VVLLIX	OBJECTIVE	ACTIVITIES	RESOURCES	OBJECT I VE	ACTIVITIES	RESOURCES
1-4	1.1Describe the fabrication of	Explain the	Chalkboard or			Chalkboard or
	semi-conductor.	fabrication of	magnetic	1.1 Demonstrate Diode	Itemize the circuit	magnetic board,
		semi-conductor.	board,	bias (forward- and reverse-bias, PIV voltage)	symbols for diode.	textbooks.
	1.2 Describe Diodes		textbooks	1.2 Identify the circuit	Physically identify	
	technology(P-Type, N-Type,	Explain Diodes		symbols for diode	various types of diodes.	
	PN-junction, minority carriers,	technology(P-		Physically identify	Identify the	
	majority carriers, junction	Type, N-Type, PN-		various types of	energy levels in	
	voltage).	junction, minority		diodes	Materials.	
		carriers, majority		1.3-Show the energy	Differentiate	
	1.3Define Diode bias (forward-	carriers, junction		levels in materials	between	
	and reverse-bias, PIV voltage)	voltage).		1-4 Classify between	conductors,	
	1.4 Identify the circuit	Explain Diode bias		conductors,	semiconductors	
	symbols for diode Physically identify	(forward- and		semiconductors	and insulators,	
	various types of	reverse-bias, PIV		and insulators,	using Fermi-level	
	diodes	voltage)		using Fermi-level	concept.	
	1.5-Describe the energy levels	Itemize the		concept.	Identify Fermi	
	in materials	circuit			energy levels	
	1-6 Differentiate between	symbols for diode			State valence	
	conductors,	Physically identify			and conduction	
	semiconductors and	various types of			bands	
	insulators, using Fermi-	diodes				
	level concept.	Explain the				
	1-7 Define Fermi energy levels	energy levels in				

				This reciniology (Brait)	, 	1
	1.8 Describe valence and	materials				
	conduction bands	Differentiate				
		between				
		conductors,				
		semiconductors				
		and insulators,				
		using Fermi-level				
		concept.				
		Explain Fermi				
		energy levels				
		Explain valence				
		and conduction				
		bands				
GENE	RAL OBJECTIVES: Understand		<i>I</i> ·		_	
OEI (EI	and obvious visit of the control	aloudo too.ii.ology	, .			
5-7	2.1 Describe P-N	- Explain P-N		2.1 Identify P-N	-Outline P-N	
	unction diode	junction diode		junction diode	junction diode	
	2.2 Sketch forward	- Sketch forward		2.2 Sketch forward	-Sketch forward	
	and reverse	and reverse		and reverse	and reverse	
	characteristics of	characteristics of		characteristics of	characteristics of	
	the P-N junction	the P-N junction		the P-N junction	the P-N junction	
	diode	diode		diode	diode	
	2.3 Outline silicon and	- Outline silicon		2.3 Outline silicon and	- Outline silicon	
	Germanium diode	and Germanium		Germanium diode	and Germanium	
	characteristics	diode		characteristics	diode	
	2.4 Define zener	characteristics		2.4 Define zener	characteristics	
	diode	- Explain zener		diode	- Explain zener	
	2.5 Identify the circuit	diode		2.5 Identify the circuit	diode	
	symbols for diode	-Identify the		symbols for diode	- Identify the	
	2.6 Physically identify	circuit symbols		2.6 Physically identify	circuit symbols	
	various types of	for		various types of	for	
	diodes	diode		diodes	diode	
	2.7 Describe the	- identify		2.7 Identify the	- identify	
	2.7 D0301100 ti10	luci itii y		Z. ruchiny the	idelitii y	

		VID III Computer 11	ardware Enginee	ring recimology (Drait)		
	operations of:	various types of		operations of:	various types of	
	I Tunnel diode	diodes		I Tunnel diode	diodes	
	Ii Photo diode	- Explain the		li Photo diode	- Identify the	
	Iii Thermistors	operations of:		Iii Thermistors	operations of:	
		I Tunnel diode			I Tunnel diode	
		li Photo diode			li Photo diode	
		lii Therm tors			Iii Therm tors	
GENER	AL OBJECTIVE: Understand	basic power supp	lies{half wave a	ind full wave}		
8-12	3.1Describe Diode types and	Explain Diode	<u>(</u>			
•	applications (LEDs, PN,	types and				
	photodiodes, zener, verator).	applications				
		(LEDs, PN,				
		photodiodes, zener,				
		verator).				
	3.2 Describe Basic Power	Explain Basic				
	Supplies (half-wave and full-	Power Supplies				
	wave rectification, capacitor	(half-wave and full				
	filtering, shunt zener diode,	wave rectification,				
	three- terminal regulators)	capacitor filtering,				
		shunt zener diode,				
		three- terminal				
		regulators				
	3.3 Analyze Types (PNP and	Explain Types				
13	NPN) and basic current and	(PNP and NPN)				
	voltage amplification equations.	and basic current				
		and voltage				
		amplification				
		equations.				
	3.3 Describe basic transistor	Explain basic				
	applications (switch,	transistor				
	amplifier, relay and	applications				
	output drivers).	(switch, amplifier,				

	-	,	 	
		relay and output		
		drivers).		
14	REVISION			

ASSESSMENT PROFILE ON THEORY

- 1. Examination 60%
- 2. Course work 20%
- 3. Test 20%

PROGRAMME: NID in Hard Ware Engineering

COURSE : Digital Electronics

CODE : CHT 113

DURATION: Hours/Week Theory: 2hrs Practical: 4hrs

UNIT : 6hrs

TOTAL CONTACT HRS: 84

GOAL : This is designed to enable the trainee have a working knowledge of Digital Electronics

GENERAL OBJECTIVE: On completion of this course the learner should be able to:

1. Understand the phenomenon of wave optics.

- 2. Understand Related concepts of Convolution.
- 3. Know the Concepts of Digital Systems and the concepts of Data / Information in Digital Systems.
- 4. Know the structure and Development of Digital Systems.

First Year 2nd Semester NID Computer Hardware Engineering

PROGR	PROGRAMME: NATIONAL INNOVATION DIPLOMA IN COMPUTER HARDWARE ENGINEERING TECHNOLOGY (NID)						
COURS	E: DIGITAL ELECTRONICS	COURSE	CODE: CHT 12	21	CONTACT HOURS:	84	
GOAL:	GOAL: This course is designed to introduce the learner to the concepts, and Building of Digital Electronics.						
COURS	COURSE SPECIFICATION: Theoretical Contents: Practical Contents						
GENER	AL OBJECTIVE: Understand	the Phenomenon of	of Wave Optics.				
WEEK	SPECIFIC LEARNING OBJECTIVE	TEACHERS ACTIVITIES	LEARNING RESOURCES	SPECIFIC LEARNI OBJECTIVE	ING TEACHERS ACTIVITIES	LEARNING RESOURCES	
1-4	1.1: Define the term waves.	-Explain the term waves.	Text books, White Board,				
	1.2: Differentiate between mechanical wave and electromagnetic waves.	-Classify waves into mechanical and electromagnetic waves.	Marker.				
	1.3: Distinguish between the two types of waves: Longitudinal and transverse waves.	-Distinguish between the two types of waves: Longitudinal and Transverse waves.					
	1.4: List examples of wave.1.5: Define wave parameters;e.g. frequency,wavelength, wave	-List examples of Wave -Define wave Parameters; e.g. frequency,					

	NID in Computer Hardware Engineering Technology (Drait)					
	velocity, amplitude.	wavelength, wave				
		velocity,				
		amplitude				
GENER	AL OBJECTIVE: Understand	d Related concepts	of Convolution.			
5-7	2.1: Describe signals by	: Explain signals				
	impulse functions.	by impulse				
		functions.				
	2.2: Describe Impulse and	Explain Impulse				
	step response of linear	and step				
	systems.	Response of				
		linear systems.				
	2.3: Describe Discrete-time	Explain Discrete-				
	Convolution.	time Convolution.				
	2.4: identify other aspects of	Explain other				
	convolution.	aspects of				
		convolution.				
GENER	AL OBJECTIVE: Know the C	Concepts of Digital	Systems and the	e concepts of Data / Infe	ormation in Digital	Systems.
8-11	3.1: Define Discrete Signals	-Explain Discrete	Text books,			
	and Systems.	Signals and	White Board,			
		Systems.	Marker.			
	3.2: identify the different	Explain the				
	codes used in digital	different codes				
	system.	used in digital				
		system.				
	3.3: Describe basic digital	Explain basic				
	functions.	digital functions.				
		Explain the				
	3.4: Describe the concept of	concept of data /				
	data / Information	Information				
	presentation in digital	presentation in				
	system.	digital system.				

GENER	AL OBJECTIVE: Know the st		es of Digital Systems.		
12-13	4.1: Describe the various	Explain the	4.6: Identify various	Demonstrate each	Oscilloscope [all
	methods of minimization	various methods	types of transistors,	activity of the	categories], basic
	required to simplify digital	of minimization	FET, Bi-Polar	Specific Learning	electronic board
	combinational circuits.	required to	junction.	Objectives.	of various types,
		simplify digital	4.7: Demonstrate the		multimeter,
		combinational	concept of signals /	Supervise the	electronic
		circuits .	waves.	learner to achieve	components
	4.2: Identify the various types	Explain various	4.8: Demonstrate Signal	the specific	[power supplies,
	of transistors, Field Effect	types of	Sampling and	objectives.	photocells,
	Transistors [FET], Bi-Polar	transistors, Field	Reconstitution.		photodiodes,
	junction.	Effect Transistors	4.9: demonstrate Signal		LED, e.t.c]
		[FET], Bi-Polar	truncation and		
		junction.	windowing.		
	4.3: Describe the families of	Describe the	4.10: Demonstrate		
	Transistor Logic Gates	families of	Digital Filters.		
	[TTL].	Transistor Logic	3.11: Build a project,		
		Gates [TTL].	using some of the		
ļ	4.4: Describe Cascading for	Describe	logic gates.		
	transistors.	Cascading for			
		transistors.			
	4.5: Describe Fan in and out.	Describe Fan in			
		and out.			
14	R E V I	S O N			

PROGRAMME: NID in Hard Ware Engineering

COURSE : System Architecture.

CODE : CHT 122

DURATION: Hours/Week Theory: 2hrs Practical: 4hrs

UNIT : 6hrs

TOTAL CONTACT HRS: 84

GOAL : This course intends to provide the learner with the structural and functional features of the computer system and its

components

GENERAL OBJECTIVE: On completion of this course the learner should be able to:

1. Understand Numbering System.

- 2. Know the Internal Structure of Computer Processing Unit.
- 3. Understand the basic principles of Microelectronics and Optoelectronics.
- 4. Understand the concept and development of Simple programs for a Microprocessor

PROGRAMME: NATIONAL INNOVATION DIPLOMA IN COMPUTER HARDWARE ENGINEERING TECHNOLOGY (NID)									
COURSE: SYSTEM ARCHITECTURE I COURSE CODE: CHT 122 CONTACT HOURS: 84									
GOAL: This course intends to provide the learner with the Structural and Functional Features of the Computer									
	System and Components.								
COURS	COURSE SPECIFICATION: Theoretical Contents: Practical Contents								
GENERAL OBJECTIVE: UNDERSTAND NUMBERING SYSTEM.									
WEE	SPECIFIC LEARNING	TEACHERS	LEARNING	SPECIFIC	TEACHERS	LEARNING			
K	OBJECT I VE	ACTIVITIES	RESOURCES	LEARNING	ACTIVITIES	RESOURCES			
				OBJECTIVE					
1-4	1.1: Define Number System.	-Explain							
	_	Number System.							
	1.2: Describe the various	-Explain the							
	types of number	various types of							
	systems.	number systems.							
	1.3: Define Binary System.	-Explain Binary							
	4.4. Calva muchlama	System.							
	1.4: Solve problems on Binary System	-Solve problems							
	[Addition, Subtraction,	on Binary System							
	Multiplication, and	[Addition,							
	subtraction].	Subtraction,							
	Subtraction].	Multiplication,							
		and							
		Subtraction].							
	1.5: Convert numbers from	Convert numbers							
	other base to binary.	from other base							
		to binary.							
	1.6: Convert numbers from	Convert numbers							
	binary to other base.	from binary to							

NID in Computer Hardware Engineering Technology (Draft) other base. Convert alphabets / words to binary. 1.7: Describe Binary **Explain Binary** Comparators. Comparators. 1.8: Describe the concept of Describe the Error Detection. concept of Error Detection. GENERAL OBJECTIVE: KNOW THE INTERNAL STRUCTURE OF COMPUTER PROCESSING UNIT. 5-7 2.1: Define the Central : Explain the 2.7: Identify Demonstrate Central each activity of Processing Unit. components of the Processing Unit. Central Processing the Specific 2.2:Outline the functions of **Explain functions** Learning Unit. the CPU components of components 2.8: Set jumpers to Objectives. [Motherboard, of tune accurately. Processor, RAM the C. P. U. Memory, Disk Drives, [Motherboard, Power Pack, Cables, Processor, RAM Memory, Disk Slots: Peripheral Drives, Power Component Interconnect [PCI], International Pack, Cables, Slots: Peripheral Standard Architecture [ISA]. Component Interconnect [PCI]. International Standard Architecture [ISA].

		1 112 111 COMP ###	Tradeware Engineering Teenhology (Drait)					
	2.3: Describe the concept of	Explain the						
	Jumpers and Caps.	concept of						
		Jumpers and						
		Caps.						
	2.4: Describe Memory	Explain Memory						
	Circuits.	Circuits.						
	2.5: Identify the types of	Explain the types						
	signals within the C.P.	of signals within						
	U. [Electrical and	the C. P. U.						
	interface].	[Electrical and						
		interface].						
	2.6:Describe the flow of	Explain the flow						
	signals with the C. P. U.	of signals with						
		the C. P. U.						
GENERAL OBJECTIVE: UNDERSTAND THE BASIC PR		RINCIPLES OF MICROELECTRONICS.						
8-11	3.1: Describe	Introduce with		3.6: Demonstrate the	Demonstrate	Electronic		
	Microelectronics.	clear and		Concept of	each activity of	Boards,		
	3.2: Describe Integrated	detailed		Microelectronics.	the Specific	Integrated		
	Circuit.	explanations		3.7: Demonstrate the	Learning	Circuits,		
	3.3: Describe the concept of	each of the		concept of	Objectives.	Computer		
	Wafer.	concepts in the		Optoelectronics.		motherboards		
	3.4: State the Concept of	specific learning				[all mentioned		
	Tantalum.	objective.				categories],		
	3.5: Identify types of					multi-meter.		
	Integrated Circuits.							
	3.6: Describe the concept of							
	32/64 bits Computer							
	architecture.							

	NID in Computer Hardware Engineering Technology (Draft)										
							·				
GENERAL MICROPRO	OBJECTIVE:	UNDERSTAND	THE	CONCEPT	AND	DEVELOPMENT	OF	SIMPLE	PROGRAMS	FOR	Α

		TVID III Computer	Hardware Lingi	neering reclinology (Di	ait)	
12-13	4.1: Define Microprocessor.	Introduce with		4.6: Identify a	Demonstrate	Microprocessor
		clear and		Microprocessor.	each activity of	Teaching Aid.
	4.2: List examples of	detailed		4.7: Identify various	the Specific	
	Microprocessors.	explanations		types of	Learning	
		each of the		microprocessor.	Objectives.	
	4.1: Define Program.	concepts in the		4.8: Install and		
		specific learning		Uninstall		
	4.2 Identify types of	objective.		Microprocessors		
	programming			on the		
	languages.			Motherboard.		
				4.9 Develop a Simple		
	4.3: Define Language			Program for a		
	Translator.			microprocessor.		
	4.4. December the warious					
	4.4: Describe the various					
	types translator					
	[Assembler and					
	Compiler].					
	4.5: Outline the steps					
	involved in developing a					
	program. 4.6Describe Internal Working					
	of the Microprocessor as					
	it relates to:					
	a. Fetching					
	Instructions.					
	b. Moving					
	Instructions					
	between					
	registers.					
	registers.					
14	R E V I	S I O	N			

PROGRAMME: NID in Hard Ware Engineering

COURSE : Introduction To Micro-Computer and Application Packages

CODE : CHT 123

DURATION: Hours/Week Theory: 2hrs Practical: 2hrs

UNIT: 4hrs TOTAL CONTACT HRS: 56

GOAL : This course is designed to provide the learner with working knowledge of Microsoft Software

GENERAL OBJECTIVE: On completion of this course the learner should be able to:

1. Understand various features of a micro computer

2.Understand and create /edit documents using MS-WORD 2013

3. Understand and create/edit documents using MS-EXCEL 2013

4. Understand and create/edit documents using MS-ACCESS 2013

5. Understand and create/edit documents using MS-POWERPOINT 2013

6.Understand and create/edit documents using S.P.S.S

PROGR.	PROGRAMME: NATIONAL INNOVATION DIPLOMA IN COMPUTER HARDWARE ENGINEERING TECHNOLOGY (NID)					
COURSI	COURSE: INTRODUCTION TO MICRO- COURSE CODE: CHT 123 CONTACT HOURS: 56					
COMPU	TER AND APPLICATION PACK	AGES				
GOAL:	This course is designed to	provide the learn	nerwith working	knowledge Micro-Co	mputer and Applicat	ion packages
COURSI	E SPECIFICATION: Theoretica	l Contents:	Practical (Contents		
		T	T		1	
WEEK	SPECIFIC LEARNING	TEACHERS	LEARNING	SPECIFIC LEARNIN	G TEACHERS	LEARNING
VVLLIX	OBJECT IVE	ACTIVITIES	RESOURCES	OBJECT IVE	ACTIVITIES	RESOURCES
GENER	AL OBJECTIVE: Understand vari	ous features of a mi	cro-computer			
1-2	1.1 Describe the basic 1/0	-Explain the	Charts,	1.1 Demonstrate the	Explain the	Charts,
	device on a personal	basic 1/0 device	chalkboard,	process of booting		chalkboard,
	computer	on a personal	computer	personal compute	•	printer scanner,
	1.2 Describe folders and file	computer	printer scanner,	1.2 Customize the p.c	computer	ups.
	management	-Explain the	ups.	desktop	-Explain the	Micro Computer
	1.5 identify personal computer	process of		1.3 Create folders	process of	Laboratory with
	peripherals e.g. scanners,	booting a			booting a	running Micro-soft
	printers speakers etc.	personal			personal	office packages;
		computer			computer	CorelDraw, &
		-Customize the			-Customize the	Statistical package (SPSS)
		p.c desktop			p.c desktop	(3133)
		Create folders			Create folders	
		-Describe folders			-Describe folders	
		and file			and file	Internet
		management			management	Connectivity
		-itemize personal			-itemize personal	
		computer			computer	

peripherals e.g. peripherals e.g. scanners, printers scanners printers	
	ı
speakers etc. speakers etc.	
GENERAL OBJECTIVE: Understand and create/edit documents using MS-WORD	
3-4 2.1Describe ms-word as word Explain ms-word Demonstrate how to Explain ms-word	
processing software as word start-ms word from as word	
2.2 Demonstrate how to start- processing start-up button processing	
ms word from start-up software Create an ms word software	
button Explain how to document Explain how to	
2.3 Describe the tool bar in an start-ms word Modify/format the start-ms word	
ms-word environment from start-up document from start-up	
2.4 Creation of an ms word button Save ms-word document button	
document Explain the tool on hard disk/floppy disk Explain the tool	
2.5 Describe the process of bar in an ms-word -print the document bar in an ms-word	
document environment environment	
Modificationy/formating Creation of an ms Creation of an ms	
2.6 Describe how to save ms- word document word document	
word document on hard Modify/format the Modify/format the	
disk/floppy disk document document	
2.7 Describe the process of Save ms-word Save ms-word	
printing a document. document on hard document on hard	
disk/floppy disk disk/floppy disk	
print the print the	
document document	
GENE AL OBJECTIVE: Understand and create/edit document in MS-Excel	
5-6	
3.1 Describe ms-excel Explain ms-excel Identify the features of Explain ms-excel	
as a spreadsheet as a spreadsheet tool bar/formular bar etc as a spreadsheet	
package package Create document in ms- package	
Show how to start excel Show how to start	
3.2 Describe how to ms-excel from Perform simple ms-excel from	
start ms-excel from start-up button additions/multiplications start-up button	
start-up button Identify the Prepare the document Identify the	

		11	1D III Computer 11a	nuware Engineeri	ing Technology (Drait)		
	3.3	Identify the features	features of tool		as print area document	features of tool	
		of tool bar/formulae	bar/formula bar		Save the document on	bar/formula bar	
		bar etc	etc		hard disk/floppy/flash	etc	
	3.4	Explain how to	Create document		disk	Create document	
		create document in	in ms-excel		Print the document	in ms-excel	
		ms-excel	Perform simple			Perform simple	
	3.5	Explain how perform	additions/multiplic			additions/multiplic	
		simple	ations			ations	
		additions/multiplicati	Prepare the			Prepare the	
		ons	document as print			document as print	
	3.6	Describe how to	area document			area document	
		prepare the	Save the			Save the	
		document as print	document on hard			document on hard	
		area document	disk/floppy/flash			disk/floppy/flash	
	3.7	Explain how to save	disk			disk	
		the document on	Print the			Print the	
		hard	document			document	
		disk/floppy/flash disk					
	3.8	Explain how to print					
		a document					
		TIVE: Understand and					
		/IS-Access as a	-Explain MS-	4.1Create an	4.1Create an MS-Access		
C	database a	application software.	Access as a	MS-Access	4.2 Modify/format the do		
			database		4.3 Show how to save the	e MS-Access on hard of	disk/floppy/flash
			application	document	disk		
		to start MS	software.	4.2	4.4 Access as a database	• •	
•		-Demonstrate to	Modify/format	-Demonstrate to start MS	•		
			start MS Access	the document	- identify the tool bar in a		nent
			from start-up	4.3 Show how to	-Create an MS-Access do		
	•	the tool bar in an MS-	button	save the MS-	- Modify/format the docu		
	Access en	vironment	- identify the tool	Access on hard	- Show how to save the M	MS-Access on hard dis	k/floppy/flash disk
			bar in an MS-	disk/floppy/flash	- Print the document		
			Access	disk			

NID in Computer Hardware Engineering Technology (Draft) environment -Create an MS-Access document - Modify/format the document - Show how to save the MS-Access on hard disk/floppy/flash disk - Print the document GENERAL OBJECTIVE: Understand and create document using MS-PowerPoint 10-11 5.1 Describe MS-power point -Explain MS-5.2 Create as a presentation package power point as slides. Edit the a presentation slides to select package the various back numbers/appear ances 5.3 Show the slides so created GENERAL OBJECTIVE: Understand and create /edit document in statistical package Explain SPSS 6.1 Describe 1Explain SPSS as SPSS as one of as one of the one of the statistical the statistical statistical packages packages packages Demonstrate Demonstrate Demonstrate how to start how to start how to start spss spss Demonstrate spss Demonstrate Demonstrate how to input data

		<u> </u>	8 8 7	
	how to input	how to input	into the spss	
	data	data into the	document	
	into the spss	spss document	Describe the	
	document	Describe the	various	
	Describe the	Various	approximation/	
	various	approximation/	estimation	
	approximation/	stimation	available	
	estimation	available	-Solve some statistical problems using spss	
	available			
	-Solve some	6.5 Solve some		
	statistical	statistical		
	problems using	problems using		
	spss	spss		
REVISION				

PROGRAMME: NID in Hard Ware Engineering

COURSE : PC Assembling and Upgrading.

CODE : CHT 211

DURATION: Hours/Week Theory: 2hrs Practical: 2hrs

UNIT : 4hrs

TOTAL CONTACT HRS: 56

GOAL : This course is designed to provide the learner with working of Computer System Assembling, Installation and

Upgrading.

GENERAL OBJECTIVE: On completion of this course the learner should be able to:

1. Know the Compatibility Variance among Computer components.

- 2. Know the Coupling / assembling procedures of Computer Processing Unit.
- 3. Understand the Hardware Configurations involved in the assembling of the Processing Unit.
- ${\bf 4}\ .\ Understand\ the\ Software\ Configuration\ involved\ in\ the\ assembling\ of\ the\ Processing\ Unit.$
- 5. Know The Activities Involved In Upgrading A Computer.
- 6. Install a personal computer for use.

Second Year First Semester

PROGR	PROGRAMME: NATIONAL INNOVATION DIPLOMA IN COMPUTER HARDWARE ENGINEERING TECHNOLOGY (NID)					
COURS	COURSE: PC ASSEMBLING AND UPGRADING. COURSE CODE: CHT 211 CONTACT HOURS: 84					
GOAL:	This course is designed t	o provide the lear	ner with working	g knowledge of Persona	l Computer Assemb	oling,
	Installation and Upgrad	ing.				
COURS	E SPECIFICATION: Theoretical	al Contents:	Practical	Contents		
1 GENE	RAL OBJECTIVE: KNOW THE	COMPATIBILITY	VARIANCE AMO	NG COMPUTER COMPON	ENTS.	T
WEEK	SPECIFIC LEARNING	TEACHERS	LEARNING	SPECIFIC LEARNING	TEACHERS	LEARNING
	OBJECT I VE	ACTIVITIES	RESOURCES	OBJECT∎VE	ACTIVITIES	RESOURCES
1-3	1.1: Define Motherboard.	Introduce with	Text books,	1.8: Identify the various	Demonstrate each	Set of screw
		clear and detailed	White Board,	available	activity of the	drivers, scraps of
	1.2: Define RAM memory.	explanations each	Marker.	motherboards in the	Specific Learning	CPU, Mother
	4.0.5. ". 01.11	of the concepts in	computer	computer market.	Objectives.	boards, Hard
	1.3: Describe SIMMs.	the specific	accessories	1.9: Identify the various		drives, memory,
	1 4. Describe DIMMs	learning objective.		RAM memory		RAM [SIMMs and
	1.4: Describe DIMMs.			[SIMMs, DIMMs]. 1.10:Identify various		DIMMs], CD ROM Drives, floppy
	1.5: Define Processor.			types of SIMMs as it		disk drives.
	1.5. Define Flocessor.			relates to		disk drives.
	1.6: Outline types of			manufacturers.		
	Processors.			1.11: Identify various		
	1.7 Describe the appropriate			types of DIMMs as		
	disk Jumper settings it relates to					
	suitable for various			manufactures.		
	motherboards [Master,			1.12: Identify various		

	Cable Select, Slave]			types of Processors.		
				,		
2 GENE	RAL OBJECTIVE: KNOW TH	E COUPLING / AS	SEMBLING PROC	CEDURES OF COMPUTER	PROCESSING UNI	T.
4-5	2.1: Define Computer Casings. 2.2: Define Clock speed. 2.3: Define IDE and FDD cables. 2.4 Explain and Identify a corresponding casing to suit the motherboard	Explain Computer Casings Explain Clock speed. Explain IDE and FDD cables.	SEMBLING PROC	2.4: Select an appropriate Motherboard, and know the clock speed. 2.5 Place motherboard correctly inside the casing and screw. 2.6 Mount Processor, Memory and other Onboard components appropriately. 2.7 Fix disks to the casing and fasten. 2.8 Connect IDE, FDD cables accordingly. 2.9 Set disks' jumper settings appropriately. 2.10 Connect Power Cables within the	Demonstrate each activity of the Specific Learning Objectives.	Computer Casings, Motherboards, RAM memory, Microprocessor, Disk Drives, Adapters / Cards.
				Cables within the C.P.U.		
2 CENIE	<u> </u> Eral object∎ve: Underst <i>i</i>	 	DE CONEICHBA	TIONS INVOLVED IN TH	L E VOCEMBI INIC OE	TUE
6-7		R PROCESSING UI		I IONS INVOLVED IN IT	E ASSENIDLING UP	THE
				3.1: Set jumpers	Demonstrate each	Motherboard,
				onboard	activity of the	Disks, Jumper
				appropriately. 3.2: Set disks' jumpers	Specific Learning Objectives.	caps, Cards.

NID in Computer Hardware Engineering Technology (Draft) appropriately. 3.3: Place cards accurately on the respective slots [ISA to ISA; PCI to PCI]. 3.4: Connect Switch cables correctly. 3.5: Connect LED cable correctly. 3.6: Connect Inbuilt Speaker cable correctly. 3.7: Connect Turbo cable correctly. 3.8: Connect Reset cable correctly. 4 GENERAL OBJECTIVE: UNDERSTAND THE SOFTWARE CONFIGURATION INVOLVED IN THE ASSEMBLING OF THE PROCESSING UNIT. 8-9 4.1: Describe BIOS / CMOS Introduce with 4.2: Connect the entire Demonstrate each Working Personal Computer, Power activity of the setup. clear and detailed computer system explanations the Specific Learning and Signal to. 4.3: Power the concept in the Objectives. Cables, specific learning Computer System. Electricity. 4.4: Enter the BIOS / objective. **CMOS Setup** environment pressing the appropriate key[s] at the expected time. 4.5: Explore through the environment. 4.6: Set the necessary components to

	N	ID in Computer Ha	rdware Engineer	ing Technology (Draft)		
				correspond with		
				hardware		
				configuration		
				[Primary Master,		
				Secondary Masters,		
				Primary slave,		
				Secondary Slave,		
				Floppy Disk active		
				or deactive, cache,		
				processor clock		
				speed].		
5 GENE	RAL OBJECTIVE: KNOW THE	ACTIVITES INVOL	VED IN LIPGRAI			
10-11	TO COULTE TO THE	, (3.1111123111101	1125 114 01 010/1	5.1: Identify the	Demonstrate each	Working
				motherboard of the	activity of the	Computer
				system to be	Specific Learning	System,
				upgraded.	Objectives.	Motherboard,
				5.2: Identify the	Objectives.	Processor, RAM
				processor and its		memory, Hard
				clock speed on the		disk drive, CD
				motherboard.		ROM drive, all
				5.3: Identify the RAM		with higher
				memory and size on		capacity than the
				the motherboard.		one in the
				5.4: identify the Hard		system.
				disk drive of the		
				system.		
				5.5: Identify the CD		
				ROM drive speed of		
				the system.		
				5.6: Remove any of the		
				five [5] above to be		
				upgraded, and		
				Replace with a		

NID in Computer Hardware Engineering Technology (Draft) higher category of the same component. 5.7: Set the BIOS / CMOS Setup configuration to suit the new components. 6 GENERAL OBJECTIVE: INSTALL A PERSONAL COMPUTER FOR USE. 12-13 6.1: Identify the various Demonstrate each Central Processing Unit, computer activity of the Specific Learning components. Monitor, Objectives. Keyboard, 6.2: Connect all other Mouse, Power units correctly to the Processing Unit. Cables and 6.3: Connect the Power electricity. Cables to the C. P. U. and Monitor. 6.4: Identify the amount of voltage required for each unit. 6.5: Set power to suit the Computer System and verse versa.

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REVISION

PROGRAMME: NID in Hard Ware Engineering

COURSE : PC Assembling and Upgrading.

CODE : CHT 212

DURATION: Hours/Week Theory: 2hrs Practical: 4hrs

UNIT : 4hrs

TOTAL CONTACT HRS: 84

GOAL : This course is designed to provide the leaner with advanced working knowledge of System

Architecture

GENERAL OBJECTIVE: On completion of this course the learner should be able to:

- 1. Know the concept of basic Optoelectronics.
- 2. Understand the Concept of the various operations in a Personal Computer.
- 3. Know the concept of SCSI Adapters and Troubleshooting.
- 4 . Understand Storage Devices and Operations of Computer Memory

PROGR	PROGRAMME: NATIONAL INNOVATION DIPLOMA IN COMPUTER HARDWARE ENGINEERING TECHNOLOGY (NID)					
COURS	E: SYSTEM ARCHITECTURE	II COURSE	CODE: CHT 2	I2 CON	TACT HOURS:	84
GOAL:	This course is designed t	o provide the lean	er with advance	ed working knowledge of	System Architect	ure.
COURS	E SPECIFICATION: Theoretica	al Contents:	Practical	Contents		
1 GENE	RAL OBJECTIVE: KNOW THE	CONCEPT OF OPT	OELECTRONICS	•		
WEEK	SPECIFIC LEARNING	TEACHERS	LEARNING	SPECIFIC LEARNING	TEACHERS	LEARNING
VVLLIX	OBJECT∎VE	ACTIVITIES	RESOURCES	OBJECT IVE	ACTIVITIES	RESOURCES
1—3	1.1: Describe the concept of	-Explain the	Text Books,			
	Light Emitting Diodes	concept of Light	White Board,			
	[LED].	Emitting Diodes	Marker.			
		[LED].				
	1.2: Outline rules needed	-Outline rules				
	when using LED.	needed when				
		using LED.				
	1.3: Describe Photo-sensitive	Describe Photo-				
	Devices [Photo resistor,	sensitive Devices				
	photodiodes,	[Photo resistor,				
	Phototransistors,	photodiodes,				
	photosensitive ICs.]	Phototransistors,				
		photosensitive				
	1.4:Describe Fiber Optic	ICs.]				
	Systems.	- Explain Fiber				
	4.5.0 (1) (1) (1)	Optic Systems.				
	1.5: Outline the advantages of	-Outline the				
	Fiber Optics over Copper	advantages of				
	cables.	Fiber Optics over				
		Copper cables.				
2 CENT	<u> </u> ERAL OBJECT I VE: UNDERST	AND THE CONCER	T OF THE VAR	US OPERATIONS IN A P		ED
-			TOP THE VARIO			
4-5	2.1: Define Personal	-Explain Personal		2.5: Identify the	Demonstrate each	Microprocessor

	Computer.	Computer.		package used for	activity of the	Teaching Aid,
		-Outline		Word Processing.	Specific Learning	screw drivers,
	2.2: Itemize advantages of	advantages of		2.6: Identify the	Objectives.	multi-meter,
	Personal Computer.	Personal		package used for		micro computers,
		Computer.		Accounting.		motherboard,
		-Explain the		2.7: Identify the package		Hard drive,
	2.3: Describe the various	various		used for Statistical		memory, RAM,
	applications of computer.	applications of		Problems.		CD ROM Drive,
		computer.		2.8: Identify the		floppy disk drive.
		-Explain the		package used for		
	2.4:Define the Microprocessor.	Microprocessor		Database		
	·			Management.		
				2.9: Identify the		
				package used for		
				Internet		
				Communication.		
				210: Program a		
				microprocessor for		
				a complex task.		
3 GENE	RAL OBJECTIVE: KNOW TH	E CONCEPT OF SCS	ADAPTERS AN	D TROUBLESHOOTING.		
6-7	3.1:Define SCSI Variations	-Explain SCSI		3.5: Perform the	Demonstrate each	Blowers, IC
	concept.	Variations		Hardware	activity of the	extractor, set of
	·	concept.		Installation of the	Specific Learning	screw drivers,
	3.2: Describe the concept of	-Explain the		Adapter.	Objectives.	soldering iron,
	Bus Length.	concept of Bus		3.6: Perform the		lead sucker,
	•	Length.		Software		multi-meter,
	3.3: Define Terminators.	-Explain		Installation.		micro computers,
		Terminators.		3.7: Troubleshoot SCSI.		Installation disks,
	3.4:Describe SCSI Bus	-Explain SCSI Bus				Mother board.
	Operations.	Operations.				
4 GENE	RAL OBJECTIVE: UNDERS	TAND STORAGE D	EVICES AND OF	ERATIONS OF COMPUTE	R MEMORY.	
8-10	4.1: Define Computer Memory.	1.1: Define		4.10: Identify the	Demonstrate each	Computer
		Computer		various computer	activity of the	System, RAM

	4.2: Describe the Random Access Memory concept.4.3: Describe the Cache RAM	MemoryExplain the Random Access Memory conceptExplain the		memory. 4.11 Transfer data / information in / out of the various computer memory,	Specific Learning Objectives.	memory, Hard disk, Floppy Disk, Compact Disk, Flash disk.
	Memory concept. 4.4: Describe the Hard disk	Cache RAM Memory conceptExplain the Hard		using Windows Operating System.		
	drive.	disk drive.				
	4.5: Describe the Floppy Disks.	-Explain the Floppy Disks.				
	4.6: Define the Compact Disk.	-Define the Compact Disk.				
	4.7: Define the concept of optical disks.	Define the concept of optical disks.				
	4.9: Describe the Flash disk.4.10 Describe the various labels for each computer memory.	-Describe the Flash disk.				
	RAL OBJECTIVE: KNOW THE		IC NETWORK AF	CHITECTURES AND ACC	CESS.	
11-13	5.1: Describe the various Topologies.	-Explain the various Topologies.				
	5.2: Describe the Cable Basics.	-Explain the Cable Basics.				
	5.3: Describe Ethernet.	-Explain Ethernet.				
	5.4: Describe FDDI Basics.	-Explain FDDI Basics				

NID in Computer Hardware Engineering Technology (Draft)					
REVISION					

PROGRAMME: NID in Hard Ware Engineering

COURSE : Computer Workshop 11

CODE : CHT 213

DURATION: Hours/Week Theory: 2hrs Practical: 4hrs

UNIT : 6hrs

TOTAL CONTACT HRS: 84

GOAL : This course is designed to provide the learner with working knowledge of Computer Workshop

Practice.

GENERAL OBJECTIVE: On completion of this course the learner should be able to:

- 1. Understand the Concepts and Engineering of Scanners.
- 2. Understand the concepts and Engineering of Power Packs.
- 3. Understand the optimal Usage of Computer System and Computer Accessories.
- 4. Know the concepts and Engineering of Other Computer Accessories.

PROGR	PROGRAMME: NATIONAL INNOVATION DIPLOMA IN COMPUTER HARDWARE ENGINEERING TECHNOLOGY (NID)								
COURS	COURSE: COMPUTER WORKSHOP II COURSE CODE: CHT 213 CONTACT HOURS: 84								
GOAL:	This course is designed to	o provide the lear	ner with working	g knowledge of Comput	er Workshop Practi	ce.			
COURS	E SPECIFICATION: Theoretica	Il Contents:	Practical (Contents					
GENER	AL OBJECTIVE: UNDERSTAND	THE CONCEPTS	AND ENGINEER	NG OF SCANNERS.	1	T			
WEEK	SPECIFIC LEARNING	TEACHERS	LEARN I NG	SPECIFIC LEARNING	TEACHERS	LEARNING			
	OBJECTIVE	ACTIVITIES	RESOURCES	OBJECT IVE	ACTIVITIES	RESOURCES			
1-4	1.1: Describe Scanner			1.1 Carryout the	Demonstrate each	Blowers, IC			
				operation of a	activity of the	extractor, set of			
	1.2 Explain the level of			scanner [turning	Specific Learning	screw drivers,			
	accuracy			on/off, connecting	Objectives.	soldering iron,			
				the interface cable,		lead sucker,			
				using available		multi-meter,			
				functions like Pre-		micro computers,			
				scan, Scan, Print,].		Installation, disks			
				1.2: Identify scanner		to include Anti			
				problem [hardware		virus, scraps of			
				or software].		CPU, Mother			
				1.3: Troubleshoot the		board, Hard			
				Scanner.		drive, memory,			
				1.4: Effect repairs on		RAM, CD ROM			
				the Scanner, using		Drive, floppy disk			
				the appropriate		drive.			
				tool[s] or					
				equipment.					

GENER	AL OBJECTIVE:		-		RING OF POWER PACKS.		
5-7					2.1: Describe the	Demonstrate each	Blowers, IC
					Computer Power	activity of the	extractor, set of
					Pack.	Specific Learning	screw drivers,
					2.2: Identify the Power	Objectives.	soldering iron,
					Pack.	,	lead sucker,
					2.3: Troubleshoot the		multi-meter,
					Power Pack. [fuse,		micro computers,
					switch, wire,		scraps of CPU.
					resistor, capacitor,		•
					transistor], using		
					multi-meter or		
					appropriate		
					instrument.		
					2.4: Effect Repair.		
GENER	AL OBJECTIVE:	UNDERSTAN	D THE OPT MAL U	ISAGE OF COMPL	JTER SYSTEM AND COM	PUTER ACCESSORI	IES.
8-10					3.1: Connect the	Demonstrate each	Micro computers,
					Computer System	activity of the	disks drive
					and accessories	Specific Learning	cleaner, Hard
					correctly.	Objectives.	drive, memory,
					3.2: Power the System		RAM, CD ROM
					to work.		Drive, floppy disk
					3.3: Perform advance		drive.
					maintenance tasks		Internet
					on the computer		Connectivity.
					system [run		
					computer		
					defragmenter,		
					create backup of		
					files, connect to		
					internet and		
					download necessary		
					utility tools and		

NID in Computer Hardware Engineering Technology (Draft) program updates, clean drives using appropriate disk cleaners]. GENERAL OBJECTIVE: KNOW THE CONCEPTS AND ENGINEERING OF OTHER COMPUTER ACCESSORIES. 11-13 Supervise the Blowers, IC 4.1: Identify other Computer learner to achieve extractor, set of the Specific Accessories. screw drivers, Learning soldering iron, 4.2: Identify their Objectives. lead sucker, problem. multi-meter, 4.3 Troubleshoot the micro computers, accessories. Installation, disks 4.4: Effect Repairs. to include Anti virus, scraps of CPU, Mother board, Hard drive, memory, RAM, CD ROM Drive, floppy disk drive, First Aid

REVISION

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box.

GOAL : This course is designed to provide the learner with working knowledge of Basic Networking

GENERAL OBJECTIVE: On completion of this course the learner should be able to:

- 1.1 Understand data communication and the various equipment/components
- 1.2 Understand modulation and de-modulation
- 1.3 Understand multiplexing and de-multiplexing

GOAL : This course is designed to provide the learner with working knowledge of Basic Networking

GENERAL OBJECTIVE: On completion of this course the learner should be able to:

- 1. UNDERSTAND THE CONCEPTS AND ENGINEERING OF SCANNERS
- 2. Understand data communication and the various equipment/components
- 3. Understand modulation and de-modulation

PROGR	PROGRAMME: NATIONAL INNOVATION DIPLOMA IN COMPUTER HARDWARE ENGINEERING TECHNOLOGY (NID)							
COURS	COURSE: BASIC NETWORKING COURSE CODE: CHT 232 CONTACT HOURS: 84							
GOAL:	GOAL: This course is designed to provide the learner with working knowledge of Basic Networking							
COURS	E SPECIFICATION: Theoretica	I Contents:	Practical (Contents				
GENER	AL OBJECTIVE: UNDERSTAND	THE CONCEPTS /	AND ENGINEER	NG OF SCANNERS.				
WEEK	SPECIFIC LEARNING	TEACHERS	LEARNING	SPECIFIC LEARNING	TEACHERS	LEARNING		
VVLLIX	OBJECTIVE	ACTIVITIES	RESOURCES	OBJECT I VE	ACTIVITIES	RESOURCES		
GENER	AL OBJECT VE: 1.1 Understand	data communication	and the various e	quipment/components				
1-7	1.1 Define data	-Explain data		Identify data	Supervise learners in	2 or more personal		
	communication	communication.		communication	achieving the	computers,		
	1.2 List the various	-Explain different		components.	specified objectives	MODEMs of		
	equipment used for	equipment and				various types,		
	data communication	components used in		identify the common types		coaxial cable, R-		
		data		of network cables, their		J45,		
		communication		characteristics and		Clips/truneking		
				connectors		Explain basic		
	1.3 Describe multiplexing and	Explain		(a) Cable types		networking		
	de-multiplexing	multiplexing and		include:		concepts including		
		de-multiplexing		Coaxial, UTP,		how a networks		
				CAT 3, CAT		Concepts		
		1.1 Explain		5/e, CAT 6,		likeInstalling and		
		common		STP, fiber		configuring		
		technologies		(b) Connector		network cards,		
		available for		types include:		Addressing,		
		establishing		BNC, RJ-45,		Bandwidth.		
		Internet		AUI, ST/SC,		(a) Status		
		connectivity		IDC/UDC.		indicators,		
		and their				protocols,		
		characteristics				TCP/IP,		
		(a) Technol				IPX/SPX,		
		ogies				Apple talk,		

		include:				Full-duplex,
		LAN,				half-duplex
		DSL,				(b) Cabling-
		Cable,				twisted pair,
		ISDN,				coaxial,
		Dial-up,				fiber optics,
		Satellite,				RS-232,
		Wireless				Networking
		Characteristics				models,
		include: Definition,				peer-to-peer,
		speed and				client/server,
		connections				infrared
						fibre optic cables,
						connectors, Hub/Switches,
						Routers.
CENIED	AL OD ICCTIVE: Up do reto p d					Routers.
	AL OBJECTIVE: Understand m		modulation		1	
8-13	3.1 Describe modulation and	Explain				
	de-modulation	modulation and				
	3.2 identify various tools used.	de-modulation				
		Explain the				
		various tools used				
14		R E V I	S I	0 N		

PROGRAMME: NID in Hard Ware Engineering

COURSE Consumer Electronics

CODE : CHT 232

DURATION: Hours/Week Theory: 2hrs Practical: 4hrs

UNIT : 6hrs

TOTAL CONTACT HRS: 84

GOAL : This course is designed to provide the learner with the Practical knowledge of consumer Electronics

GENERAL OBJECTIVE: On completion of this course the learner should be able to:

- 1.1 Understand the concept of consumer electronics
- 1.2 Understand the building blocks and modules of television, radio receivers etc
- 1.3 Understand the concept of maintenance culture in computer and electronics

NATIONAL INNOVATION DIPLOMA IN COMPUTER HARDWARE ENGINEERING TECHNOLOGY (NID)

Second Year Second Semester

PROGRAMME:

COURSE: CONSUMER ELECTRONICS COURSE CODE: **CONTACT HOURS:** CHT232 84 GOAL: This course is designed to provide the learner with the Practical knowledge of consumer Electronics COURSE SPECIFICATION: Theoretical Contents: **Practical Contents** GENERAL OBJECTIVE: UNDERSTAND THE CONCEPTS of consumer electronics SPECIFIC LEARNING SPECIFIC LEARNING **TEACHERS** LEARNING. TEACHERS LEARNING. WEEK OBJECT I VE **RESOURCES** ACTIVITIES **RESOURCES** OBJECT VE **ACTIVITIES** Explain the concept Blowers, IC 1-5 Describe the concept in 1.2 Repair television, Demonstrate how television, radio, computer radio, computer to repair VDU, extractor, set of television, radio, monitors(VDU), VCD monitors(VDU), VCD TELEVISION. screw drivers. players, multi-media players, multi-media etc computer PRINTERS, c.p.u soldering iron, monitors(VDU), power packs and lead sucker. VCD 1.2 Identify tools used in general multi-meter, electronic repairs such as: Tv, players, multimaintenance etc micro computers, VCD players, multi-media media Installation, disks projectors etc. to include Anti 1.2 Mention tools virus, scraps of used in electronic CPU. Mother repairs such as: Tv, board. Hard VCD players, drive, memory,

GENERAL OBJECTIVE: Understand the building blocks and modules of television, radio receivers etc

multi-media

projectors etc.

RAM. CD ROM

box.

Drive, floppy disk drive, First Aid

6-9	2.1 Describe building blocks of	Explain building		
	a TV and RADIO	blocks of a TV		
	2.2 Identify various building	and RADIO		
	blocks in electronics	mention various		
		building blocks in		
		electronics		
GENER	AL OBJECTIVE: Understand th	ne concept of repa	irs and maintenance in electronics/comp	outer
10-13	3.1Describe the concept of	Explain the	Demonstrate the concept	Teacher learners
	repairs and maintenance in	concept of repairs	of repairs and maintenance	how to repair
	electronics.	and maintenance in	in electronics.	electronics gargets
		electronics.		such computers,
	3.2 Define the concept of repairs		Indentify the concept of	vcd, radios
	of C.P.U. power supply	Explain the concept	repairs of C.P.U. power	television etc
	packs	of repairs of C.P.U.	supply packs	10.01.0101
		power supply packs		
14	R E V I S	I O N		

PROGRAMME: NID in Hard Ware Engineering

COURSE Trouble-shooting and Repairs

CODE : CHT 221

DURATION: Hours/Week Theory: 2hrs Practical: 4hrs

UNIT : 6hrs

TOTAL CONTACT HRS: 84

GOAL This course is designed to provide the learner with working knowledge of Trouble-shooting and

Repairs

GENERAL OBJECTIVE: On completion of this course the learner should be able to:

1.1 Understand troubleshooting and repairs techniques

- 1.2 Understand power supply troubleshooting in a computer environment
- 1.3 Know the basic concept of pc repairs and its tools
- 1.4 Appreciate the need for pre-installation planning and basic needs of a computer room

PROGR	PROGRAMME: NATIONAL INNOVATION DIPLOMA IN COMPUTER HARDWARE ENGINEERING TECHNOLOGY (NID)								
COURS	E: TROUBLESHOOTING AND	COURSE	CODE: CHT22	1 C	ONTACT HOURS:	84			
REPAIR									
GOAL:									
	E SPECIFICATION: Theoretica		Practical		gg				
000110									
GENER	GENERAL OBJECTIVE: UNDERSTAND TROUBLESHOOTING AND REPAIRS TECHNIQUES								
WEEK	SPECIFIC LEARNING	TEACHERS	LEARNING	SPECIFIC LEARNING	G TEACHERS	LEARNING			
VVEER	OBJECT IVE	ACTIVITIES	RESOURCES	OBJECTIVE	ACTIVITIES	RESOURCES			
1-4	1.1 Identify basic components and	Explain basic		1.4 Identify basic	Enumerate causes of	Diagnostic disks,			
	chips in pcs and mainframes	components and		components and chips		Installation disks			
	1.2 Describe causes of component	chips in pcs and		in pcs and mainframe	s such as:	to include Anti			
	failures such as:	mainframes			k. Intermittent	Virus.			
	a. Intermittent failure	Explain causes of		1.5 Use general	failure				
	b. Solid failure	component failures		troubleshooting technique	es 1. Solid failure	Blowers, IC			
	c. Marginal failure	such as:		to detect:	m. Marginal failure	extractor, set of			
	d. Dry joints	f. Intermittent		(o) Error Categories	n. Dry joints	screw drivers,			
	e. Power surges	failure		(p) Event Viewer	o. Power surges	soldering iron, lead			
		g. Solid failure		(q) Device Manager	Explain general	sucker, multimeter,			
		h. Marginal failure		(r) System	troubleshooting	micro computers,			
		i. Dry joints		Information	techniques	Installation, disks			
	1.3 Describe general	j. Power surges		(s) The Emergency	(v) Error	to include Anti			
	troubleshooting techniques	Explain general		Repair Process	Categories	virus, scraps of			
	(a) Error Categories	troubleshooting		(t) Program Stops	(w) Event	CPU, Mother			
	(b) Event Viewer	techniques		Responding	Viewer	board, Hard drive,			
	(c) Device Manager	(h) Error		(u) Optimizing	(x) Device	memory, RAM,			
	(d) System Information	Categories		windows	Manager	CD ROM Drive,			
	(e) The Emergency Repair	(i) Event			(y) System	floppy disk drive,			
	Process	Viewer			Information	First Aid box.			
	(f) Program Stops	(j) Device		Troubleshoot Power	(z) The				
	Responding	Manager		problems	Emergency				
	(g) Optimizing windows	(k) System		(g) Troubleshooting	Repair				

		Information	<u> </u>	Post (beeps and	Process
		(l) The		error codes)	(aa) Progr
	Describe how to troubleshoot	Emergency		(h) Internet Devices	am Stops
	Power problems	Repair		Peripherals	Responding
	(a) Troubleshooting Post	Process		1 cripherais	(bb) Opti
	(beeps and error codes)	(m)Program			mizing
	(b) Internet Devices				indows
	\	Stops			Indows
	(c) Peripherals	Responding			
		(n) Optimizing indows			15 December house to
		indows			1.5 Describe how to
					troubleshoot
		1.2 D			Power problems
		1.3 Describe how to			Troubleshooting
		troubleshoot			Post (beeps and
		Power problems			error c
		(d) Troublesho			
		oting Post			
		(beeps and			
		error codes)			
		(e) Internet			
		Devices			
		(f) Peripherals			
GENER	AL OBJECTIVE: Understand pow	ver supply troublesho	oting in a compute	er environment	
5-7	2.1 Describe how to troubleshoot	Explain how to		Demonstrate how to	Teach how to
	Power problems	troubleshoot Power		troubleshoot Power	troubleshoot Power
	(i) Troubleshooting Post	problems		problems	problems
	(beeps and error codes)	(l) Troublesho		(o) Troubleshooting	(r) Troubleshoo
	(j) Internet Devices	oting Post		Post (beeps and	ting Post
	(k) Peripherals	(beeps and		error codes)	(beeps and
		error codes)		(p) Internet Devices	error codes)
		(m)Internet		(q) Peripherals	(s) Internet
		Devices		1	Devices
		(n) Peripherals			(t) Peripherals
					1
L		<u> </u>			

				idware Engineering Technology (Drait)	Ι
		rrect power supply or earth	Explain power	Correct power supply or	Explain power
	connec	etion related problems	supply or earth	earth connection related	supply or earth
			connection related	problems	connection related
			problems		problems
GENER	AL OB	JECTIVE: Understand b	asic concept of pc	repairs	1
8-10	1	escribe the Concept of	Explain the	1 Describe the Concept of	Explain the Concept
		s of Personal Computers	Concept of Repairs	Repairs of Personal	of Repairs of
	_	•	of Personal	Computers	Personal Computers
			Computers	•	Identify the
	3.4	Identify the necessary	Identify the		necessary tools
	5	tools used in repair and	necessary tools	3.6 Identify the	used in repair and
		maintenance e g	used in repair and	necessary tools	maintenance e g
		Oscilloscopes, multi-	maintenance e g	used in repair and	Oscilloscopes,multi
		•	Oscilloscopes,mult	·	meter
		meter	imeter	maintenance e g	
				Oscilloscopes,	Application of
	3.5	Application of	Application of	multi-meter	preventive
		preventive methods in	preventive		methods in pcs eg
		pcs eg installation of	methods in pcs eg	Application of preventive	installation of anti-
		anti-virus	installation of	methods in pcs eg	viru
			anti-virus	installation of anti-	
				virus	
GENER	AL OB	JECTIVE: Appreciate the	e need for pre-inst	allation planning and basic needs of a co	omputer room
11-13	4.1	Determine the space	Explain the space	4.5 Identify the	Explain the space
		needs and	needs and	space needs	needs and
		services,cleaniness	services,cleanines	and	services,cleaniness
		of a computer studio	s of a computer	services,cleani	of a computer
	4.2	•	studio	ness of a	studio
		necessary for fitting	Explain the	computer	Explain the factors
		and installing	factors necessary	studio	necessary for
		computer equipment	for fitting and	4.6 Determine	fitting and
	4.3		installing	power supply	installing computer
	۲.۰	otate the power	mistaining	power suppry	mataming computer

Tidd in Computer Hardware Engineering Teenhology (Drait)					
supply requirements	computer	requirements	equipment		
for various types of	equipment	for various	State the power		
computer	State the power	types of	supply		
equipment:	supply	computer	requirements for		
a. Single phase supply	requirements for	equipment:	various types of		
b. Double phase supply	various types of	c. Single phase	computer		
4.4 Inspect:	computer	supply	equipment:		
a. False flowing	equipment:	Double phase supply	Single phase		
b. Cable trenching in a	Single phase	4.7 Inspect:	supply		
typical large computer	supply	e. False flowing	Double phase		
installations	Double phase	f. Cable trenching in	supply		
4.5 Identify the various	supply	a typical large	Inspect:		
types of fire fighting tools	Inspect:	computer	g. False		
in a computer.	c. False	installations	flowing		
	flowing	4.5 Identify the various	h. Cable		
	d. Cable	types of fire fighting	trenching in		
	trenching	tools in a computer	a typical		
	in a typical		large		
	large		computer		
	computer		installations		
	installation		Identify the		
	S		various types of		
	Identify the		fire fighting tools		
	various types of		in a computer.		
	fire fighting tools				
	in a computer.				
14 R E V	I S I O	N			

PROGRAMME: NID in Hard Ware Engineering

COURSE Software Installation and PC Upgrading.

CODE: CHT 222

DURATION: Hours/Week Theory: 2hrs Practical: 4hrs

UNIT : 6hrs

TOTAL CONTACT HRS: 84

GOAL This course is designed to provide the learner with practical knowledge of software installations and pc upgrading

GENERAL OBJECTIVE: On completion of this course the learner should be able to:

- 1.1 Understand the concept of operating system
- 1.2 Know the concept of software { windows } installation procedures
- 1.3 Understand pre-installation requirements

PROGR	PROGRAMME: NATIONAL INNOVATION DIPLOMA IN COMPUTER HARDWARE ENGINEERING TECHNOLOGY (NID)					
COURS	E: Software Installation and PC	COURSE	CODE: CHT 22	2 C	ONTACT HOURS:	84
Upgradir	ng					
GOAL:	This course is designed t	o provide the lear	ner with practication	al knowledge of softv	vare installations and	pc upgrading
COURS	E SPECIFICATION: Theoretica	al Contents:	Practical (Contents		
GENER	AL OBJECTIVE: UNDERSTAND	THE CONCEPTS	OF OPERATING	SYSTEM		
WEEK	SPECIFIC LEARNING OBJECTIVE	TEACHERS ACTIVITIES	LEARNING RESOURCES	SPECIFIC LEARNIN OBJECTIVE	G TEACHERS ACTIVITIES	LEARNING RESOURCES
1-4	1.1 Define Operating packages, Systems(OS), Applications, device drivers.1.2 Identify the functions of O.S	Explain Operating packages, Systems(OS), Applications, device drivers. Identify the functions of O.S Explain the installation procedures for Windows OS and non Windows OS				Chalkboard,comp uters printers,ups,
GENER	L AL OBJECTIVE: KNOW THE CON	L NCEPT OF SOFTWAR	L E{WINDOWS} INS	TALLATION		
5-9	2.1 Describe the installation procedures for Windows OS and non Windows OS	Explain the installation procedures for Windows OS and non Windows OS			Demonstrate the installation procedures for Windows OS and non Windows OS	
				Install various application	n	

	1		irdware Engineering Technology (Drait)	
		T . 11	software	B 1
	2.2 Identify and install various	Install various		Demonstrate how to
	application software	application		install various
		software		application software
	AL OBJECTIVE: UNDERSTAND		ION REQUIREMENT	, , , , , , , , , , , , , , , , , , ,
10-13		.Explain Pre-		Explain Pre-
	3.1Define Pre-Installation	Installation	3.1 Use the procedures for	Installation
	considerations	considerations	the Installation of	considerations
	Minimum and Recommended	Minimum and	Windows 98 (FDISK,	Minimum and
	requirements, Hardware	Recommended	FORMAT, File copy,	Recommended
	Compatibility List (HCL), Startup	requirements,	SETUP, GU1 phase),	requirements,
	Disk(s), Installation CD, CD key,	Hardware	Windows 200x/Xp (SCS 1	Hardware
	computer name etc.	Compatibility List	driver, EULA, Partition,	Compatibility List
		(HCL), Startup	format, file copy, GU1	(HCL), Startup
	3.2 Outline the procedures for the	Disk(s), Installation		Disk(s), Installation
	Installation of Windows 98	CD, CD key,		CD, CD key,
	(FDISK, FORMAT, File copy,	computer name etc.	3.3 Use the various File	computer name etc.
	SETUP, GU1 phase),		Systems FAT 16, FAT 32,	
	Windows 200x/Xp (SCS 1 driver,	3.2 identify the	NTFS	3.2 State the
	EULA, Partition, format, file	procedures for the		procedures for the
	copy, GU1	Installation of		Installation of
		Windows 98		Windows 98
	3.3. Differentiate Booting files	(FDISK,		(FDISK, FORMAT,
	(for example IO.SYS,	FORMAT, File		File copy, SETUP,
	MSDOS.SYS, CONFIG>SYS,	copy, SETUP, GU1		GU1 phase),
	COMMAND.COM,	phase),		Windows 200x/Xp
	AUTOEXEC.BAT etc.	Windows 200x/Xp		(SCS 1 driver,
	Windows 9x – IO.SYS,	(SCS 1 driver,		EULA, Partition,
	WIN.COM etc	EULA, Partition,		format, file copy,
	Windows 200x/XP-NTLDR,	format, file copy,		Booting files (for
	Boot.INI, NTDETECT etc	Booting files (for		example IO.SYS,
	·	example IO.SYS,		MSDOS.SYS,
	3.4 Identify the various File	MSDOS.SYS,		CONFIG>SYS,
	Systems FAT 16, FAT 32, NTFS	CONFIG>SYS,		COMMAND.COM,
	, , , , , , , , , , , , , , , , , , , ,	COMMAND.COM,		AUTOEXEC.BAT

		<u> </u>	
3.5 Describe the CMOS/BIOS,	AUTOEXEC.BAT		etc.
and how they work.	etc.		Windows 9x –
	Windows 9x –		IO.SYS, WIN.COM
Differentiate between DOS &	IO.SYS,		etc
Windows, & how to use the	WIN.COM etc		Windows 200x/XP-
DOS commands (e.g DIR,	Windows 200x/XP-		NTLDR, Boot.INI,
CLS, MD, Del	NTLDR, Boot.INI,		NTDETECT etc
	NTDETECT etc		
			3.4 Demonstrate the
	3.4 Identify the		various File Systems
	various File		FAT 16, FAT 32,
	Systems FAT 16,		NTFS
	FAT 32, NTFS		
	3.5 Describe the		
	CMOS/BIOS, and		
	how they work.		
	·		
	Differentiate		
	between DOS &		
	Windows, & how to		
	use the DOS		
	commands (e.g		
	DIR, CLS, MD, Del		
14 R E V I	S I O 1	J	<u> </u>
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					EERING TECHNOLO	GY (NID)
COURSE: Practice of Entrepreneurship COURSE CODE: EDP 202 CONTACT HOURS: 30						
GOAL:						
COURS	E SPECIFICATION: Theoretical	al Contents:	Practical Contents			
	General Objective:			General Objective: On completion of this module the learner should be able to:-		
Week	Specific Learning Objective	Teachers Activities	Learning Resources	Specific Learning Objective	Teachers Activities	Learning Resources

NI	D in Computer Har	dware Engineerin	g Technology (Draft)	

COURSE: Project COURSE CODE:			CHT 224 CON	NTACT HOURS: 84	4	
GOAL:		·				
COURS	E SPECIFICATION: Theoretical	al Contents:		Practical Contents		
General Objective:			General Objective: On completion of this module the learner should be able to:-			
Week	Specific Learning Objective	Teachers Activities	Learning Resources	Specific Learning Objective	Teachers Activities	Learning Resources
			Tesources	Select from related topics across course within the programm Design, Build and write report on the selected topic, understand the supervision of a supervisor.	s	resources

COMPUTER HARDWARE ENGINEERING TECHNOLOGY

List of Equipment for NID Laboratory (Minimum Requirement)

	HARDWARE	NOS.
1.	PCs Computer Systems (Pentium 4 with 1.6GH ₂ , 256MB RAM; 40GB HDD Internet ready	10
2.	Hp LaserJet Model	1
3.	DeskJet Model	1
4.	Summa graphic digitizer	1
5.	Hp scan jet	1
6.	LCD scan jet	1
7.	Magic Board	1
8.	Digital Camera	1
9.	Various Networking Materials (HUB, Coaxial Cable RJ 45, Modem)	
10.	Oscilloscope 5-10mHz, 20mHz	1 each
11.	Soldering Iron	20pcs
12.	Digital Multi Meter	20pcs
13.	Analogue Multi Meter	20pcs
14.	Base Board	20pcs

15.	Various Electronic Tools	J	C	20set
16.	Electronic Work Bench			Various Nos.
17.	Micro-processor Teaching Aid			2 Units

Names of Participants in NID Critique Workshop (Computer Hardware Engineering Technology)

S/No	Names		Address
1.	Engr. B.A Odufuwa (Chairman)	-	Lagos City Polytechnic, Lagos
2.	Falokun, Adeshina B. (Secretary)	-	Global Web ICT Institute, Abuja
3.	Muktar Aminu	-	F.C.E. Kano
4.	A.O. Jegede	-	St. Wilifred Computer Institute, Ibadan
5.	Engr. Dr. Nuru A Yakubu, OON	-	Executive Secretary, NBTE Kaduna
6.	Dr. M S Abubakar	-	Director (Programmes) NBTE, Kaduna
7.	Engr. J. O. Falade	-	HOD Polytechnic Division, NBTE, Kaduna
8.	Engr. A D K Muhammad	-	D O VEI/IEI, NBTE Kaduna
9.	Mrs. F.B. Olorunpomi	-	NBTE, Kaduna
10.	Miri Ebipade	-	NBTE, Kaduna
11.	Okechukwu O.C.	-	NBTE, Kaduna