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

2007

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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	CH	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	-		2	2	
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 → Lecture hours
T → Tutorials
P → Practical
CU → Course Unit
CH → 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**	**-**	**4**	**6**	**6**	
2	CHT **212**	**System Architecture 11**	**2**	**-**	**4**	**6**	**6**	
3	CHT **213**	**Computer workshop practice 11**	**2**	**-**	**4**	**6**	**6**	
4	CHT **214**	**Basic Networking**	**2**	**-**	**4**	**6**	**6**	
				-				
	TOTAL		**8**		**16**	**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 Meter
1.3 Understand the uses of Megger Tester
1.4 Understand the uses of Basic Electricity kits

PROGRAMME: NATIONAL INNOVATION DIPLOMA IN COMPUTER HARDWARE ENGINEERING TECHNOLOGY (NID)						
COURSE: Basic Electricity		**COURSE CODE: CHT** 101			**CONTACT HOURS: 84**	
GOAL: This course is designed to provide the learner with working knowledge basic electricity						
COURSE SPECIFICATION: Theoretical Contents:			**Practical Contents**			
GENERAL OBJECTIVE 1: UNDERSTAND BASIC ELECTRICITY						
WEEK	**SPECIFIC LEARNING OBJECTIVE**	**TEACHERS ACTIVITIES**	**LEARNING RESOURCES**	**SPECIFIC LEARNING OBJECTIVE**	**TEACHERS ACTIVITIES**	**LEARNING RESOURCES**
1-3 4-6	1.1 Define basic electricity 1.2 Outline the characteristics of basic electricity. 1.3 Define Ohm's law. 1.4 Describe the impact of basic electricity to: (a) current flow (b) voltage and (c) resistance 1.5 Define simple D.C circuits 1.6 State various types of energy and their inter-relationship 1.7 Define the concept of magnetism and magnetic circuits 1.8 Define the concept of electromagnetism and electromagnetic induction 1.9 Define the concept of inductance, capacitance. Resistance and their applications. 1.10 State the fundamentals of A.C theory.	Explain basic electricity Explain the characteristics of basic electricity Describe Ohm's law Describe the impact of basic electricity to: (a) current flow (b) voltage and (c) resistance Explain simple D.C circuits State various types of energy and their inter-relationship Explain the concept of magnetism and magnetic circuits Explain the concept of electromagnetism and	Chalkboard Magnetic Board, charts,	1.1 Identify various voltages as it applies to the above. Namely: (a) single, & (b) three phase. 1.3 Use basic electricity kits to setup simple circuits, to determine current f low, voltage, flow voltage, etc. 1.4 Identify the sources of current flow of electricity with voltage and resistance.	Demonstrate basic electricity concept Explain various voltages e.g. single, three phases. Demonstrate the use of simple electric circuits to determine current flow, voltage, etc. Show the sources of current flow of electricity.	Chalkboard ,Magnetic Board, Charts.

	1.11 Define Kirchoffs law and examine some circuits as it 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.					
GENERAL OBJECTIVE 2: UNDERSTAND THE USES OF MULTIMETER							
7-8	2.1 Define a multi-meter. 2.2 State the uses of a multi-meter. 2.3 State the colour codes.	Explain multi-meter. Explain the use of multi-meter. Explain the colour codes.	Text Books, Diagrams, Charts, white Board and markers	2.1 Identify a multi-meter 2.2 Use a multi-meter to determine: (a) the reading of various types of diode (b) the reading of various types of resistors	Demonstrate the use of a multi-meter. Identify a multi-meter Use a multi-meter to determine: (a) the reading of various types of diode (b) the reading of	Text Books, Diagrams, Charts, white Board and markers	

					various types of resistors	
GENERAL OBJECTIVE 3: UNDERSTAND THE USES OF MEGGER 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.		
GENERAL OBJECTIVE 4: UNDERSTAND THE USES OF BASIC ELECTRICITY KIT						
11-13	**4.1 State the uses of basic 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
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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)						
COURSE: INTRODUCTION TO OPERATING SYSTEM		**COURSE CODE: CHT 111**		**CONTACT HOURS: 84**		
GOAL: This course is designed to provide the learner with working knowledge Operating System						
COURSE SPECIFICATION: Theoretical Contents:			**Practical Contents**			
GENERAL OBJECTIVE: UNDERSTAND THE CONCEPTS AND ENGINEERING OF SCANNERS.						
WEEK	**SPECIFIC LEARNING OBJECTIVE**	**TEACHERS ACTIVITIES**	**LEARNING RESOURCES**	**SPECIFIC LEARNING OBJECTIVE**	**TEACHERS ACTIVITIES**	**LEARNING RESOURCES**
GENERAL OBJECTIVE 1: UNDERSTAND OPERATING SYSTEM						
1-3	1.1 Define Operating System (O/S) 1.2 List the functions of O/S 1.3 Describe sequential processes 1.4 Define concurrent processes 1.5 Describe processor management	Explain an Operating System (O/S) Give examples of O/S Explain the features of O/S Explain sequential Processes Explain concurrent processes Explain processor management	Chalkboard, chart magnetic board			
GENERAL OBJECTIVE 2: UNDERSTAND UNIX OPERATING SYSTEM						
4-6	2.1 Define UNIX O/S 2.2 State the Features of	Explain UNIX O/S. Outline the		-Install UNIX O/S -Investigate Basic UNIX	Demonstrate the Installation of	

	UNIX O/S 2.3 Describe the processes of installing UNIX O/S	features of UNIX O/S. Explain the processes of installing UNIX O/S.		commands -Create UNIX user account	UNIX O/S Show the basic UNIX commands Open UNIX user account.	
GENERAL OBJECTIVE 3: UNDERSTAND LINUX OPERATING SYSTEM						
7-8	3.1 Define Linux o/s. 3.2 State the Features of Linux o/s. 3.3 Describe the processes of installing Linux o/s.	Explain Linux o/s Outline the Features of Linux o/s Explain the processes of installing Linux o/s.		-Install Linux o/s -itemize the Features of Linux o/s. -Apply the processes of Installing Linux o/s.	-Demonstrate the Installation of Linux o/s. -State the Features of Linux o/s. -Show the processes of Installing Linux o/s.	
GENERAL OBJECTIVE 4: UNDERSTAND WINDOWS OPERATING SYSTEM						
9-10	4.1Describe the features of Windows 200x (Multi-tasking, Multiprocessing, Security, Protocols, Supported file system, Domain and Workgroup. 4.2 Describe Windows 200x versions (a) Compare and Contrast (Windows 200 Professional, Windows 200 Server, Windows 200 Advances Servers, and	-Explain the features of Windows 200x (Multi-tasking, Multiprocessing, Security, Protocols, Supported file system, Domain and Workgroup. -Explain Windows 200x versions (b) Compare		Install operating system. Customize Operating System to suit the environment. Run the O.S. at optimal level considering on board resources. Use the operating system effectively.	Demonstrate the Installation of operating system. Customize Operating System to suit the environment. Run the O.S. at optimal level considering on board resources.	

	Windows 200 Data centre Server).	and Contrast (Windows 200			Use the operating system effectively.	
11-12	4.3 Describe Microsoft Management Console 4.4Define the Control Panel (a) Change system settings (b) Add/Remove Hardware (c) Add/Remove Software (d) Display property 4.5Describe Windows 200 disk and storage management (a) Basic and dynamic storage (b) Managing disks and volumes (c) Compressing Files and Folders (d) Encryption (Files and Folders) 4.6Describe managing Users and Groups (a) User Accounts in Windows 200 (b) Creating, deleting, modifying user accounts (c) Implementing Groups	Professional, Windows 200 Server, Windows 200 Advances Servers, and Windows 200 Data centre Server). -Explain Microsoft Management Console -Define the Control Panel (e) Change system settings (f) Add/Remove Hardware (g) Add/Remove Software (h) Display property Explain Windows 200 disk and				

		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 200 Creating, deleting, modifying user account				
GENERAL OBJECTIVE 5: KNOW THE COMPONENTS OF OPERATING SYSTEMS						
13 14	5.1 Define o/s nucleus{kernel} 5.2 Describe the components of o/s nucleus: Bios dispatcher, Basic I/0 system 1/0 system dispatcher etc. REVISION	Explain o/s nucleus{kernel} Explain and Itemize the components of o/s nucleus: Bios dispatcher, Basic I/0 system 1/0 system dispatcher etc.				

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 OBJECTIVE**	**TEACHERS ACTIVITIES**	**LEARNING RESOURCES**	**SPECIFIC LEARNING OBJECTIVE**	**TEACHERS ACTIVITIES**	**LEARNING 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.

GENERAL OBJECTIVE 2: **Understand the optimal Usage of Computer System and Computer Accessories.**						
5-7				2.1: Connect the Computer System and accessories correctly. 2.2: Power the System to work. 2.3: Perform basic maintenance tasks on the computer system [run anti-virus program]	Demonstrate each activity of the Specific Learning Objectives.	Computer Systems, set of screw drivers, Installation, disks to include Anti virus, First Aid box.
GENERAL OBJECTIVE 3: Maintain and repair Computer System and its related accessories.						
8-12 13				3.1: Identify the various tools / equipment in the workshop. . 3.2: Diagnose the Computer System / accessories. 3.3 Use available tools to rectify the problem of the system / accessories [soldering and de-soldering properly]. 3.4 Apply electrostatics and observe how it affects sensitive electronic components. 3.5 Apply the concept of	Explain the various tools in the Computer Repair shop. Demonstrate each practical activity indicated in the Specific Learning Objectives.	Blowers, IC extractor, set of screw drivers, soldering iron, lead sucker, multimeter, micro computers, Installation, disks to include Anti virus, scraps of CPU, Mother board, Hard drive, memory, RAM, CD ROM Drive, floppy disk drive,

14				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.

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)		
COURSE: BASIC ELECTRONICS	**COURSE CODE: CHT 113**	**CONTACT HOURS: 84**
GOAL: This course is designed to provide the learner with working knowledge OF Basic Electronics		
COURSE SPECIFICATION: Theoretical Contents:	**Practical Contents**	

GENERAL OBJECTIVES 1.1 Understand the concept of basic electronics

WEEK	SPECIFIC LEARNING OBJECTIVE	TEACHERS ACTIVITIES	LEARNING RESOURCES	SPECIFIC LEARNING OBJECTIVE	TEACHERS ACTIVITIES	LEARNING RESOURCES
1-4	1.1Describe the fabrication of semi-conductor. 1.2 Describe Diodes technology(P-Type, N-Type, PN-junction, minority carriers, majority carriers, junction voltage). 1.3Define Diode bias (forward- and reverse-bias, PIV voltage) 1.4 Identify the circuit symbols for diode Physically identify various types of diodes 1.5-Describe the energy levels in materials 1-6 Differentiate between conductors, semiconductors and insulators, using Fermi-level concept. 1-7 Define Fermi energy levels	Explain the fabrication of semi-conductor. Explain Diodes technology(P-Type, N-Type, PN-junction, minority carriers, majority carriers, junction voltage). Explain Diode bias (forward- and reverse-bias, PIV voltage) Itemize the circuit symbols for diode Physically identify various types of diodes Explain the energy levels in	Chalkboard or magnetic board, textbooks	1.1 Demonstrate Diode bias (forward- and reverse-bias, PIV voltage) 1.2 Identify the circuit symbols for diode Physically identify various types of diodes 1.3-Show the energy levels in materials 1-4 Classify between conductors, semiconductors and insulators, using Fermi-level concept.	Itemize the circuit symbols for diode. Physically identify various types of diodes. Identify the energy levels in Materials. Differentiate between conductors, semiconductors and insulators, using Fermi-level concept. Identify Fermi energy levels State valence and conduction bands	Chalkboard or magnetic board, textbooks.

	1.8 Describe valence and conduction bands	materials Differentiate between conductors, semiconductors and insulators, using Fermi-level concept. Explain Fermi energy levels Explain valence and conduction bands				
GENERAL OBJECTIVES**:** **Understand diodes technology**:						
5-7	2.1 Describe P-N unction diode 2.2 Sketch forward and reverse characteristics of the P-N junction diode 2.3 Outline silicon and Germanium diode characteristics 2.4 Define zener diode 2.5 Identify the circuit symbols for diode 2.6 Physically identify various types of diodes 2.7 Describe the	- Explain P-N junction diode - Sketch forward and reverse characteristics of the P-N junction diode - Outline silicon and Germanium diode characteristics - Explain zener diode -Identify the circuit symbols for diode - identify		2.1 Identify P-N junction diode 2.2 Sketch forward and reverse characteristics of the P-N junction diode 2.3 Outline silicon and Germanium diode characteristics 2.4 Define zener diode 2.5 Identify the circuit symbols for diode 2.6 Physically identify various types of diodes 2.7 Identify the	-Outline P-N junction diode -Sketch forward and reverse characteristics of the P-N junction diode - Outline silicon and Germanium diode characteristics - Explain zener diode - Identify the circuit symbols for diode - identify	

	operations of: I Tunnel diode Ii Photo diode Iii Thermistors	various types of diodes - Explain the operations of: I Tunnel diode Ii Photo diode Iii Therm tors		operations of: I Tunnel diode Ii Photo diode Iii Thermistors	various types of diodes - Identify the operations of: I Tunnel diode Ii Photo diode Iii Therm tors	
GENERAL OBJECTIVE: Understand basic power supplies{half wave and full wave}						
8-12	3.1Describe Diode types and applications (LEDs, PN, photodiodes, zener, verator).	Explain Diode types and applications (LEDs, PN, photodiodes, zener, verator).				
	3.2 Describe Basic Power Supplies (half-wave and full-wave rectification, capacitor filtering, shunt zener diode, three- terminal regulators)	Explain Basic Power Supplies (half-wave and full wave rectification, capacitor filtering, shunt zener diode, three- terminal regulators				
13	3.3 Analyze Types (PNP and NPN) and basic current and voltage amplification equations.	Explain Types (PNP and NPN) and basic current and voltage amplification equations.				
	3.3 Describe basic transistor applications (switch, amplifier, relay and output drivers).	Explain basic transistor applications (switch, amplifier,				

14	REVISION	relay and output drivers).				

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

PROGRAMME: NATIONAL INNOVATION DIPLOMA IN COMPUTER HARDWARE ENGINEERING TECHNOLOGY (NID)						
COURSE: DIGITAL ELECTRONICS		**COURSE CODE: CHT 121**		**CONTACT HOURS: 84**		
GOAL: This course is designed to introduce the learner to the concepts, and Building of Digital Electronics.						
COURSE SPECIFICATION: Theoretical Contents:			**Practical Contents**			
GENERAL OBJECTIVE: Understand the Phenomenon of Wave Optics.						
WEEK	**SPECIFIC LEARNING OBJECTIVE**	**TEACHERS ACTIVITIES**	**LEARNING RESOURCES**	**SPECIFIC LEARNING OBJECTIVE**	**TEACHERS ACTIVITIES**	**LEARNING RESOURCES**
1-4	1.1: Define the term waves. 1.2: Differentiate between mechanical wave and electromagnetic waves. 1.3: 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	-Explain the term waves. -Classify waves into mechanical and electromagnetic waves. -Distinguish between the two types of waves: Longitudinal and Transverse waves. -List examples of Wave -Define wave Parameters; e.g. frequency,	Text books, White Board, Marker.			

	velocity, amplitude.	wavelength, wave velocity, amplitude				
GENERAL OBJECTIVE: **Understand Related concepts of Convolution.**						
5-7	2.1: Describe signals by impulse functions. 2.2: Describe Impulse and step response of linear systems. 2.3: Describe Discrete-time Convolution. 2.4: identify other aspects of convolution.	: Explain signals by impulse functions. Explain Impulse and step response of linear systems. Explain Discrete-time Convolution. Explain other aspects of convolution.				
GENERAL OBJECTIVE: **Know the Concepts of Digital Systems and the concepts of Data / Information in Digital Systems.**						
8-11	3.1: Define Discrete Signals and Systems. 3.2: identify the different codes used in digital system. 3.3: Describe basic digital functions. 3.4: Describe the concept of data / Information presentation in digital system.	-Explain Discrete Signals and Systems. Explain the different codes used in digital system. Explain basic digital functions. Explain the concept of data / Information presentation in digital system.	Text books, White Board, Marker.			

GENERAL OBJECTIVE: Know the structure and practices of Digital Systems.						
12-13	4.1: Describe the various methods of minimization required to simplify digital combinational circuits. 4.2: Identify the various types of transistors, Field Effect Transistors [FET], Bi-Polar junction. 4.3: Describe the families of Transistor Logic Gates [TTL]. 4.4: Describe Cascading for transistors. 4.5: Describe Fan in and out.	Explain the various methods of minimization required to simplify digital combinational circuits . Explain various types of transistors, Field Effect Transistors [FET], Bi-Polar junction. Describe the families of Transistor Logic Gates [TTL]. Describe Cascading for transistors. Describe Fan in and out.		4.6: Identify various types of transistors, FET, Bi-Polar junction. 4.7: Demonstrate the concept of signals / waves. 4.8: Demonstrate Signal Sampling and Reconstitution. 4.9: demonstrate Signal truncation and windowing. 4.10: Demonstrate Digital Filters. 3.11: Build a project, using some of the logic gates.	Demonstrate each activity of the Specific Learning Objectives. Supervise the learner to achieve the specific objectives.	Oscilloscope [all categories], basic electronic board of various types, multimeter, electronic components [power supplies, photocells, photodiodes, LED, e.t.c]
14	**R E V I S I 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.						
COURSE SPECIFICATION: Theoretical Contents:			**Practical Contents**			
GENERAL OBJECTIVE: UNDERSTAND NUMBERING SYSTEM.						
WEEK	**SPECIFIC LEARNING OBJECTIVE**	**TEACHERS ACTIVITIES**	**LEARNING RESOURCES**	**SPECIFIC LEARNING OBJECTIVE**	**TEACHERS ACTIVITIES**	**LEARNING RESOURCES**
1-4	1.1: Define Number System. 1.2: Describe the various types of number systems. 1.3: Define Binary System. 1.4: Solve problems on Binary System [Addition, Subtraction, Multiplication, and subtraction]. 1.5: Convert numbers from other base to binary. 1.6: Convert numbers from binary to other base.	-Explain Number System. -Explain the various types of number systems. -Explain Binary System. -Solve problems on Binary System [Addition, Subtraction, Multiplication, and Subtraction]. Convert numbers from other base to binary. Convert numbers from binary to				

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

	2.3: Describe the concept of Jumpers and Caps. 2.4: Describe Memory Circuits. 2.5: Identify the types of signals within the C. P. U. [Electrical and interface]. 2.6:Describe the flow of signals with the C. P. U.	Explain the concept of Jumpers and Caps. Explain Memory Circuits. Explain the types of signals within the C. P. U. [Electrical and interface]. Explain the flow of signals with the C. P. U.				
GENERAL OBJECTIVE: UNDERSTAND THE BASIC PRINCIPLES OF MICROELECTRONICS.						
8-11	3.1: Describe Microelectronics. 3.2: Describe Integrated Circuit. 3.3: Describe the concept of Wafer. 3.4: State the Concept of Tantalum. 3.5: Identify types of Integrated Circuits. 3.6: Describe the concept of 8/16/32 bits Computer architecture.	Introduce with clear and detailed explanations each of the concepts in the specific learning objective.		3.6: Demonstrate the Concept of Microelectronics. 3.7: Demonstrate the concept of Optoelectronics.	Demonstrate each activity of the Specific Learning Objectives.	Electronic Boards, Integrated Circuits, Computer motherboards [all mentioned categories], multi-meter.

GENERAL OBJECTIVE: UNDERSTAND THE CONCEPT AND DEVELOPMENT OF SIMPLE PROGRAMS FOR A MICROPROCESSOR.

12-13	4.1: Define Microprocessor. 4.2: List examples of Microprocessors [386, 486, Pentium I to IV]. 4.1: Define Program. 4.2 Identify types of programming languages. 4.3: Define Language Translator. 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.	Introduce with clear and detailed explanations each of the concepts in the specific learning objective.		4.6: Identify a Microprocessor. 4.7: Identify various types of microprocessor. 4.8: Install and Uninstall Microprocessors on the Motherboard. 4.9 Develop a Simple Program for a microprocessor.	Demonstrate each activity of the Specific Learning Objectives.	Microprocessor Teaching Aid.
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
3.Understand and create/edit documents using MS-EXCEL
4.Understand and create/edit documents using MS-ACCESS
5.Understand and create/edit documents using MS-POWERPOINT
6.Understand and create/edit documents using S.P.S.S

PROGRAMME: NATIONAL INNOVATION DIPLOMA IN COMPUTER HARDWARE ENGINEERING TECHNOLOGY (NID)		
COURSE: INTRODUCTION TO MICRO-COMPUTER AND APPLICATION PACKAGES	**COURSE CODE: CHT 123**	**CONTACT HOURS: 56**
GOAL: This course is designed to provide the learner with working knowledge Micro-Computer and Application packages		
COURSE SPECIFICATION: Theoretical Contents:	**Practical Contents**	

WEEK	**SPECIFIC LEARNING OBJECTIVE**	**TEACHERS ACTIVITIES**	**LEARNING RESOURCES**	**SPECIFIC LEARNING OBJECTIVE**	**TEACHERS ACTIVITIES**	**LEARNING RESOURCES**
GENERAL OBJECTIVE: Understand various features of a micro-computer						
1-2	1.1 Describe the basic 1/0 device on a personal computer 1.2 Describe folders and file management 1.5 identify personal computer peripherals e.g. scanners, printers speakers etc.	-Explain the basic 1/0 device on a personal computer -Explain the process of booting a personal computer -Customize the p.c desktop Create folders -Describe folders and file management -itemize personal computer	Charts, chalkboard, computer printer scanner, ups.	1.1 Demonstrate the process of booting a personal computer 1.2 Customize the p.c desktop 1.3 Create folders	Explain the basic 1/0 device on a personal computer -Explain the process of booting a personal computer -Customize the p.c desktop Create folders -Describe folders and file management -itemize personal computer	Charts, chalkboard, printer scanner, ups. Micro Computer Laboratory with running Micro-soft office packages; CorelDraw, & Statistical package (SPSS) Internet Connectivity

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

	3.3 Identify the features of tool bar/formulae bar etc 3.4 Explain how to create document in ms-excel 3.5 Explain how perform simple additions/multiplications 3.6 Describe how to prepare the document as print area document 3.7 Explain how to save the document on hard disk/floppy/flash disk 3.8 Explain how to print a document	features of tool bar/formula bar etc Create document in ms-excel Perform simple additions/multiplications Prepare the document as print area document Save the document on hard disk/floppy/flash disk Print the document		as print area document Save the document on hard disk/floppy/flash disk Print the document	features of tool bar/formula bar etc Create document in ms-excel Perform simple additions/multiplications Prepare the document as print area document Save the document on hard disk/floppy/flash disk Print the document	
GENERAL OBJECTIVE: Understand and create document using Ms-Access						
8-9	4.1Describe MS-Access as a database application software. 4.2 Describe to start MS Access from start-up button 4.3 identify the tool bar in an MS-Access environment	-Explain MS-Access as a database application software. -Demonstrate to start MS Access from start-up button - identify the tool bar in an MS-Access	4.1Create an MS-Access document 4.2 Modify/format the document 4.3 Show how to save the MS-Access on hard disk/floppy/flash disk	4.1Create an MS-Access document 4.2 Modify/format the document 4.3 Show how to save the MS-Access on hard disk/floppy/flash disk 4.4 Access as a database application software. -Demonstrate to start MS Access from start-up button - identify the tool bar in an MS-Access 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		

		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 as a presentation package	-Explain MS-power point as a presentation package	5.2 Create slides. Edit the slides to select the various back numbers/appearances 5.3 Show the slides so created	
GENERAL OBJECTIVE: Understand and create /edit document in statistical package				
		Explain SPSS as one of the statistical packages Demonstrate how to start spss Demonstrate	6.1 Describe SPSS as one of the statistical packages Demonstrate how to start spss Demonstrate	1Explain SPSS as one of the statistical packages Demonstrate how to start spss Demonstrate how to input data

	how to input data into the spss document Describe the various approximation/ estimation available -Solve some statistical problems using spss	how to input data into the spss document Describe the Various approximation/ stimation available 6.5 Solve some statistical problems using spss	into the spss document Describe the various approximation/ estimation available -Solve some statistical problems using 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.**
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

PROGRAMME: NATIONAL INNOVATION DIPLOMA IN COMPUTER HARDWARE ENGINEERING TECHNOLOGY (NID)						
COURSE: PC ASSEMBLING AND UPGRADING.		**COURSE CODE: CHT 211**		**CONTACT HOURS: 84**		
GOAL: This course is designed to provide the learner with working knowledge of Personal Computer Assembling, Installation and Upgrading.						
COURSE SPECIFICATION: Theoretical Contents:			**Practical Contents**			
1 GENERAL OBJECTIVE: KNOW THE COMPATIBILITY VARIANCE AMONG COMPUTER COMPONENTS.						
WEEK	**SPECIFIC LEARNING OBJECTIVE**	**TEACHERS ACTIVITIES**	**LEARNING RESOURCES**	**SPECIFIC LEARNING OBJECTIVE**	**TEACHERS ACTIVITIES**	**LEARNING RESOURCES**
1-3	1.1: Define Motherboard. 1.2: Define RAM memory. 1.3: Describe SIMMs. 1.4: Describe DIMMs. 1.5: Define Processor. 1.6: Outline types of Processors. 1.7 Describe the appropriate disk Jumper settings suitable for various motherboards [Master,	Introduce with clear and detailed explanations each of the concepts in the specific learning objective.	Text books, White Board, Marker. computer accessories	1.8: Identify the various available motherboards in the computer market. 1.9: Identify the various RAM memory [SIMMs, DIMMs]. 1.10:Identify various types of SIMMs as it relates to manufacturers. 1.11: Identify various types of DIMMs as it relates to manufactures. 1.12: Identify various	Demonstrate each activity of the Specific Learning Objectives.	Set of screw drivers, scraps of CPU, Mother boards, Hard drives, memory, RAM [SIMMs and DIMMs], CD ROM Drives, floppy disk drives.

	Cable Select, Slave]			types of Processors.		
2 GENERAL OBJECTIVE: KNOW THE COUPLING / ASSEMBLING PROCEDURES OF COMPUTER PROCESSING UNIT.						
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.		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 C.P.U.	Demonstrate each activity of the Specific Learning Objectives.	Computer Casings, Motherboards, RAM memory, Microprocessor, Disk Drives, Adapters / Cards.
3 GENERAL OBJECTIVE: UNDERSTAND THE HARDWARE CONFIGURATIONS INVOLVED IN THE ASSEMBLING OF THE COMPUTER PROCESSING UNIT.						
6-7						
				3.1: Set jumpers onboard appropriately. 3.2: Set disks' jumpers	Demonstrate each activity of the Specific Learning Objectives.	Motherboard, Disks, Jumper caps, Cards.

				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 setup.	Introduce with clear and detailed explanations the concept in the specific learning objective.		4.2: Connect the entire computer system to. 4.3: Power the Computer System. 4.4: Enter the BIOS / 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	Demonstrate each activity of the Specific Learning Objectives.	Working Personal Computer, Power and Signal Cables, Electricity.

				correspond with hardware configuration [Primary Master, Secondary Masters, Primary slave, Secondary Slave, Floppy Disk active or deactive, cache, processor clock speed].		
5 GENERAL OBJECTIVE: KNOW THE ACTIVITES INVOLVED IN UPGRADING A COMPUTER.						
10-11				5.1: Identify the motherboard of the system to be upgraded. 5.2: Identify the processor and its clock speed on the motherboard. 5.3: Identify the RAM memory and size on the motherboard. 5.4: identify the Hard 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	Demonstrate each activity of the Specific Learning Objectives.	Working Computer System, Motherboard, Processor, RAM memory, Hard disk drive, CD ROM drive, all with higher capacity than the one in the system.

				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 14	 REVISION			6.1: Identify the various computer components. 6.2: Connect all other units correctly to the Processing Unit. 6.3: Connect the Power 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.	Demonstrate each activity of the Specific Learning Objectives.	Central Processing Unit, Monitor, Keyboard, Mouse, Power Cables and electricity.

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**

PROGRAMME: NATIONAL INNOVATION DIPLOMA IN COMPUTER HARDWARE ENGINEERING TECHNOLOGY (NID)						
COURSE: SYSTEM ARCHITECTURE II		**COURSE CODE: CHT 212**		**CONTACT HOURS: 84**		
GOAL: This course is designed to provide the leaner with advanced working knowledge of System Architecture.						
COURSE SPECIFICATION: Theoretical Contents:			**Practical Contents**			
1 GENERAL OBJECTIVE: KNOW THE CONCEPT OF OPTOELECTRONICS.						
WEEK	**SPECIFIC LEARNING OBJECTIVE**	**TEACHERS ACTIVITIES**	**LEARNING RESOURCES**	**SPECIFIC LEARNING OBJECTIVE**	**TEACHERS ACTIVITIES**	**LEARNING RESOURCES**
1—3	1.1: Describe the concept of Light Emitting Diodes [LED]. 1.2: Outline rules needed when using LED. 1.3: Describe Photo-sensitive Devices [Photo resistor, photodiodes, Phototransistors, photosensitive ICs.] 1.4:Describe Fiber Optic Systems. 1.5: Outline the advantages of Fiber Optics over Copper cables.	-Explain the concept of Light Emitting Diodes [LED]. -Outline rules needed when using LED. Describe Photo-sensitive Devices [Photo resistor, photodiodes, Phototransistors, photosensitive ICs.] - Explain Fiber Optic Systems. -Outline the advantages of Fiber Optics over Copper cables.	Text Books, White Board, Marker.			
2 GENERAL OBJECTIVE: UNDERSTAND THE CONCEPT OF THE VARIOUS OPERATIONS IN A PERSONAL COMPUTER.						
4-5	2.1: Define Personal	-Explain Personal		2.5: Identify the	Demonstrate each	Microprocessor

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

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

14	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.**

PROGRAMME: NATIONAL INNOVATION DIPLOMA IN COMPUTER HARDWARE ENGINEERING TECHNOLOGY (NID)						
COURSE: COMPUTER WORKSHOP II		**COURSE CODE: CHT 213**		**CONTACT HOURS: 84**		
GOAL: This course is designed to provide the learner with working knowledge of Computer Workshop Practice.						
COURSE SPECIFICATION: Theoretical Contents:			**Practical Contents**			
GENERAL OBJECTIVE: UNDERSTAND THE CONCEPTS AND ENGINEERING OF SCANNERS.						
WEEK	**SPECIFIC LEARNING OBJECTIVE**	**TEACHERS ACTIVITIES**	**LEARNING RESOURCES**	**SPECIFIC LEARNING OBJECTIVE**	**TEACHERS ACTIVITIES**	**LEARNING RESOURCES**
1-4	1.1: Describe Scanner 1.2 Explain the level of accuracy			1.1 Carryout the operation of a scanner [turning on/off, connecting the interface cable, using available functions like Pre-scan, Scan, Print,]. 1.2: Identify scanner problem [hardware or software]. 1.3: Troubleshoot the Scanner. 1.4: Effect repairs on the Scanner, using the appropriate tool[s] or equipment.	Demonstrate each activity of the Specific Learning Objectives.	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.

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

				program updates, clean drives using appropriate disk cleaners].		
GENERAL OBJECTIVE: KNOW THE CONCEPTS AND ENGINEERING OF OTHER COMPUTER ACCESSORIES.						
11-13 14	 REVISION			4.1: Identify other Computer Accessories. 4.2: Identify their problem. 4.3 Troubleshoot the accessories. 4.4: Effect Repairs.	Supervise the learner to achieve the Specific Learning Objectives.	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.

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

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

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

Second Year
Second Semester

PROGRAMME: NATIONAL INNOVATION DIPLOMA IN COMPUTER HARDWARE ENGINEERING TECHNOLOGY (NID)						
COURSE: CONSUMER ELECTRONICS		**COURSE CODE: CHT232**			**CONTACT HOURS: 84**	
GOAL: This course is designed to provide the learner with the Practical knowledge of consumer Electronics						
COURSE SPECIFICATION: Theoretical Contents:			**Practical Contents**			
1.4						
GENERAL OBJECTIVE: UNDERSTAND THE CONCEPTS of consumer electronics						
WEEK	**SPECIFIC LEARNING OBJECTIVE**	**TEACHERS ACTIVITIES**	**LEARNING RESOURCES**	**SPECIFIC LEARNING OBJECTIVE**	**TEACHERS ACTIVITIES**	**LEARNING RESOURCES**
1-5	1.1 Describe the concept in television, radio, computer monitors(VDU), VCD players, multi-media 1.2 Identify tools used in electronic repairs such as: Tv, VCD players, multi-media projectors etc.	Explain the concept in television, radio, computer monitors(VDU), VCD players, multi-media 1.2 Mention tools used in electronic repairs such as: Tv, VCD players, multi-media projectors etc.		1.2 Repair television, radio, computer monitors(VDU), VCD players, multi-media etc	Demonstrate how to repair VDU, TELEVISION, PRINTERS, c.p.u power packs and general maintenance etc	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.
GENERAL OBJECTIVE: Understand the building blocks and modules of television, radio receivers etc						

6-9	2.1 Describe building blocks of a TV and RADIO 2.2 Identify various building blocks in electronics	Explain building blocks of a TV and RADIO mention various building blocks in electronics				
GENERAL OBJECTIVE: Understand the concept of repairs and maintenance in electronics/computer						
10-13	3.1Describe the concept of repairs and maintenance in electronics. 3.2 Define the concept of repairs of C.P.U. power supply packs	Explain the concept of repairs and maintenance in electronics. Explain the concept of repairs of C.P.U. power supply packs		Demonstrate the concept of repairs and maintenance in electronics. Indentify the concept of repairs of C.P.U. power supply packs	Teacher learners how to repair electronics gargets such computers, vcd, radios television etc	
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

PROGRAMME: NATIONAL INNOVATION DIPLOMA IN COMPUTER HARDWARE ENGINEERING TECHNOLOGY (NID)		
COURSE: TROUBLESHOOTING AND REPAIRS	**COURSE CODE: CHT221**	**CONTACT HOURS: 84**
GOAL: This course is designed to provide the learner with working knowledge of Trouble-shooting and Repairs		
COURSE SPECIFICATION: Theoretical Contents:	**Practical Contents**	

GENERAL OBJECTIVE: UNDERSTAND TROUBLESHOOTING AND REPAIRS TECHNIQUES

WEEK	SPECIFIC LEARNING OBJECTIVE	TEACHERS ACTIVITIES	LEARNING RESOURCES	SPECIFIC LEARNING OBJECTIVE	TEACHERS ACTIVITIES	LEARNING RESOURCES
1-4	1.1 Identify basic components and chips in pcs and mainframes 1.2 Describe causes of component failures such as : a. Intermittent failure b. Solid failure c. Marginal failure d. Dry joints e. Power surges 1.3 Describe general troubleshooting techniques (a) Error Categories (b) Event Viewer (c) Device Manager (d) System Information (e) The Emergency Repair Process (f) Program Stops Responding (g) Optimizing windows	Explain basic components and chips in pcs and mainframes Explain causes of component failures such as : f. Intermittent failure g. Solid failure h. Marginal failure i. Dry joints j. Power surges Explain general troubleshooting techniques (h) Error Categories (i) Event Viewer (j) Device Manager (k) System		1.4 Identify basic components and chips in pcs and mainframes 1.5 Use general troubleshooting techniques to detect: (o) Error Categories (p) Event Viewer (q) Device Manager (r) System Information (s) The Emergency Repair Process (t) Program Stops Responding (u) Optimizing windows Troubleshoot Power problems (g) Troubleshooting	Enumerate causes of component failures such as : k. Intermittent failure l. Solid failure m. Marginal failure n. Dry joints o. Power surges Explain general troubleshooting techniques (v) Error Categories (w) Event Viewer (x) Device Manager (y) System Information (z) The Emergency Repair	Diagnostic disks, Installation disks to include Anti Virus. Blowers, IC extractor, set of screw drivers, soldering iron, lead sucker, multimeter, 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.

	Describe how to troubleshoot Power problems (a) Troubleshooting Post (beeps and error codes) (b) Internet Devices (c) Peripherals	Information (l) The Emergency Repair Process (m) Program Stops Responding (n) Optimizing indows 1.3 Describe how to troubleshoot Power problems (d) Troubleshooting Post (beeps and error codes) (e) Internet Devices (f) Peripherals		Post (beeps and error codes) (h) Internet Devices Peripherals	Process (aa) Program Stops Responding (bb) Optimizing indows 1.5 Describe how to troubleshoot Power problems Troubleshooting Post (beeps and error c	
GENERAL OBJECTIVE: Understand power supply troubleshooting in a computer environment						
5-7	2.1 Describe how to troubleshoot Power problems (i) Troubleshooting Post (beeps and error codes) (j) Internet Devices (k) Peripherals	Explain how to troubleshoot Power problems (l) Troubleshooting Post (beeps and error codes) (m) Internet Devices (n) Peripherals		Demonstrate how to troubleshoot Power problems (o) Troubleshooting Post (beeps and error codes) (p) Internet Devices (q) Peripherals	Teach how to troubleshoot Power problems (r) Troubleshooting Post (beeps and error codes) (s) Internet Devices (t) Peripherals	

	2.2 Correct power supply or earth connection related problems	Explain power supply or earth connection related problems		Correct power supply or earth connection related problems	Explain power supply or earth connection related problems	
GENERAL OBJECTIVE: Understand basic concept of pc repairs						
8-10	3.1 Describe the Concept of Repairs of Personal Computers 3.4 Identify the necessary tools used in repair and maintenance e g Oscilloscopes, multi-meter 3.5 Application of preventive methods in pcs eg installation of anti-virus	Explain the Concept of Repairs of Personal Computers Identify the necessary tools used in repair and maintenance e g Oscilloscopes,mult imeter Application of preventive methods in pcs eg installation of anti-virus		1 Describe the Concept of Repairs of Personal Computers 3.6 Identify the necessary tools used in repair and maintenance e g Oscilloscopes, multi-meter Application of preventive methods in pcs eg installation of anti-virus	Explain the Concept of Repairs of Personal Computers Identify the necessary tools used in repair and maintenance e g Oscilloscopes,multi meter Application of preventive methods in pcs eg installation of anti-viru	
GENERAL OBJECTIVE: Appreciate the need for pre-installation planning and basic needs of a computer room						
11-13	4.1 Determine the space needs and services,cleaniness of a computer studio 4.2 Describe the factors necessary for fitting and installing computer equipment 4.3 State the power	Explain the space needs and services,cleanines s of a computer studio Explain the factors necessary for fitting and installing		4.5 Identify the space needs and services,cleani ness of a computer studio 4.6 Determine power supply	Explain the space needs and services,cleaniness of a computer studio Explain the factors necessary for fitting and installing computer	

	supply requirements for various types of computer equipment: a. Single phase supply b. Double phase supply 4.4 Inspect: a. False flowing b. Cable trenching in a typical large computer installations 4.5 Identify the various types of fire fighting tools in a computer.	computer equipment State the power supply requirements for various types of computer equipment: Single phase supply Double phase supply Inspect: c. False flowing d. Cable trenching in a typical large computer installations Identify the various types of fire fighting tools in a computer.		requirements for various types of computer equipment: c. Single phase supply Double phase supply 4.7 Inspect: e. False flowing f. Cable trenching in a typical large computer installations 4.5 Identify the various types of fire fighting tools in a computer	equipment State the power supply requirements for various types of computer equipment: Single phase supply Double phase supply Inspect: g. False flowing h. Cable trenching in a typical large computer installations Identify the various types of 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

PROGRAMME: NATIONAL INNOVATION DIPLOMA IN COMPUTER HARDWARE ENGINEERING TECHNOLOGY (NID)		
COURSE: Software Installation and PC Upgrading	**COURSE CODE: CHT** 222	**CONTACT HOURS: 84**
GOAL: This course is designed to provide the learner with practical knowledge of software installations and pc upgrading		
COURSE SPECIFICATION: Theoretical Contents:	**Practical Contents**	

GENERAL OBJECTIVE: UNDERSTAND THE CONCEPTS OF OPERATING SYSTEM						
WEEK	**SPECIFIC LEARNING OBJECTIVE**	**TEACHERS ACTIVITIES**	**LEARNING RESOURCES**	**SPECIFIC LEARNING OBJECTIVE**	**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,computers printers,ups,
GENERAL OBJECTIVE: KNOW THE CONCEPT OF SOFTWARE{WINDOWS} INSTALLATION						
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		Install various application	Demonstrate the installation procedures for Windows OS and non Windows OS	

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

	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	AUTOEXEC.BAT etc. Windows 9x – IO.SYS, WIN.COM etc Windows 200x/XP-NTLDR, Boot.INI, NTDETECT etc 3.4 Identify the various File Systems FAT 16, 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			etc. Windows 9x – IO.SYS, WIN.COM etc Windows 200x/XP-NTLDR, Boot.INI, NTDETECT etc 3.4 Demonstrate the various File Systems FAT 16, FAT 32, NTFS	
14	**R E V I S I O N**					

PROGRAMME: NATIONAL INNOVATION DIPLOMA IN COMPUTER HARDWARE ENGINEERING TECHNOLOGY (NID)						
COURSE: Practice of Entrepreneurship			COURSE CODE: EDP 202		CONTACT HOURS: 30	
GOAL:						
COURSE SPECIFICATION: Theoretical 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

PROGRAMME: NATIONAL INNOVATION DIPLOMA IN COMPUTER HARDWARE ENGINEERING TECHNOLOGY (NID)						
COURSE: Project			COURSE CODE: CHT 224		CONTACT HOURS: 84	
GOAL:						
COURSE SPECIFICATION: Theoretical 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
				Select from related topics across courses within the programme. Design, Build and write report on the selected topic, understand the supervision of a supervisor.		

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	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