

	Department/ Programme: Computer Science (ND)	Course Code: CPT 111		Contact Hours: 4 hours/week
	Subject/Course: Introduction To Digital and Analogue Electronics			Theoretical: 2hours/week
	Year: 1 Semester: I	Pre-requisite:		Practical: 2hours /week

General Objectives:

On completion of this course, the diplomats should be able to

- 1.0 Understand number system, BCD codes and Conversion.
- 2.0 Know the fundamental of Boolean Algebra
- 3.0 Know the implementation of the binary arithmetic and operations.
- 4.0 Understand One's and Two's Complements and Magnitude and Sign (Computer Arithmetic)
- 5.0 Know the Implementation of logic operations using Diodes and Transistors
- 6.0 Understand Random Access Memory Structure

	Course: Computer Science (ND)	Course Code: Com 112		Credit Hours: 4hrs/week		
				Theoretical: 2 hours/week		
	Year: I Semester: I	Pre-requisite:		Practical: 2 hours /week		
	Theoretical Content		Practical Content			
	General Objective 1.0: Understand number system, BCD codes and Conversion.					
Week/s	Specific Learning Outcomes	Teacher's activities	Resources	Specific Learning Outcomes	Teacher's activities	Resources
1	Ability to: 1.1 Describe the binary, octal, decimal and hexadecimal number system. 1.2 Convert from one number system to another e.g. decimal to binary.	Explain conversion from one code to another.	Power point presentation of lecture notes.			
2	1.3 Convert the BCD code to excess-three code and 2421 codes.	Explain the BCD code conversion to excess-three code and 2421 codes.	White board.			
3	1.4 Convert from one code to another e.g. from BCD to excess-three code.					
Week/s	General Objective 2.0: Know the fundamental of Boolean Algebra					
4	2.1 State and analyse the Boolean postulates: the commutative law, associative law, Distributive law, identify law.	State, explain and relate the Boolean postulate request the student to list examples of Boolean pastorate's application.	Power point presentation of lecture notes.	Ability to design and implement Boolean logical equations.	Assist student in their practical work	Networked PC lab, with MS office professional Logic Simulator packages such as Electronic work Bench, or Digital work.
5	2.2 State and analyse the Boolean postulates: Negation Law, Redundancy law, and De Morgan's theorem.	Using the stated Boolean postulate explain the steps in minimizing a logic expression algebraically, thereafter, demonstrate the action.	White board			
6	2.3 Construct a truth table for up to 4 variables.	Design a truth table for up to 4 variables. Design logic expression from statements of condition.				
Week/s	General Objective 3.0: Know the implementation of the Binary Arithmetic and Operations.					
7	To understand 3.1 Binary Addition, Subtraction, Multiplication and Division.	Computer manipulation when performing arithmetic and operation arithmetic.	Power point presentation of lecture notes.	Ability to understand how the computer performs binary	Assist student in their practical work	Computer Calculator

8	3.2 AND, OR, Exclusive OR and NOT operations in binary arithmetic	Examples of all of these binary operations must be illustrated/Demonstrated	White board.	operations		
General Objective 4.0: Understand One's and Two's Complements (Computer Arithmetic)						
9	To understand 4.1 Difference between positive and negative binary numbers 4.2 Converting binary bits to one's and two's complements.	Convert signed Decimal numbers to binary bits using magnitude and sign method. Show how one's and two's complement conversions are done.	Power point presentation of lecture notes.			
10	4.3 Binary addition and subtraction using complements	Illustrate addition and subtraction using complements. Illustrate overflow.	White board			
Week/s	General Objective 5.0: Know the implementation of Logic Operations using Diodes and Transistors.					
11	To understand 5.1 Diode structure and operation 5.2 Using simple diode circuit to perform AND, OR and NOT operations.	The teach should explain the following: AND, OR and NOT implementation using simple diode circuits.	Power point presentation of lecture notes.	Understand operation the following; (i) Simple diode circuit when configured as a AND, OR or NOR gate..	Assist student in their practical work	Logic Simulator packages such as Electronic work Bench, or Digital work.
11	5.3 The configuration of a Bipolar Junction Transistor - BJT. 5.4 The characteristics curve of the BJT.	Draw the structure of the BJT and its terminals. Draw and explain the characteristic curve of a PN-BJT	White board.			
13	5.5 The three operating regions that the BJT operate on. 5.6 The use of a transistor as a switch circuit.	Explain the importance of the three operating regions of transistor. Explain how the transistor can be used as a simple switch		(ii) Simple transistor circuit when configured as a switch		
Week/s	General Objective 6.0: Understand RAM Memory Chip Structure					
14	Able to understand: 6.1 The operation of a Random Access memory-RAM. 6.2 The operation of JK flip-flop logic circuits	The teacher should: Explain the operation of a JK flip-flop, its truth and steering tables	Power point presentation of lecture notes. White board	See how the gate logic circuit of a JK flip-flop and its operation	Assist student in their practical work	Logic Simulator packages such as Electronic work Bench, or Digital work.

15.	6.5 The structure and operation of a single bit RAM 6.6 The structure and operation of a 4 x 4 RAM memory.	Explain how JK flip-flop operate as a latch circuit. The internal structure and operation of the single bit RAM. Draw and explain the operation of the 4 x 4 RAM memory			

Assessment: Give details of assignments to be used:
Coursework/ Assignments 10 %; Course test 10 %; Practical 20 %; Projects %; Examination 60 %

Type of Assessment	Purpose and Nature of Assessment (COM 112)	Weighting (%)
Examination	Final Examination (written) to assess knowledge and understanding	60
Test	At least 1 progress test for feed back.	10
Practical / Projects	To be assessed by the teacher	20
Course work/ assignment	To be assessed by the teacher	10
Total		100

Recommended Textbooks & References: