


AMOUD UNIVERSITY
“A Vehicle for Peace and Development”
AMOUD UNIVERSITY



FACULTY OF COMPUTING AND ICT

BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY PROGRAMME

ACADEMIC YEAR 2015/ 2016

COURSE DESCRIPTION

BIT 327	Digital Logic Design(DLD)	
Contact Hours	52	
Pre-requisite	MAT 111: Pre-calculus BIT 317: Discrete Mathematics	
Purpose/Aim	<ul style="list-style-type: none"> The aim of the course is to explain how digital circuit of large complexity can be built in a methodological way, starting from Boolean logic and applying a set of rigorous techniques. Numerous examples and case studies will be used to illustrate how the concepts presented in the lectures are applied in practice, and how the need to accommodate different practically-motivated trade-offs can lead to alternative implementations. The students will apply their knowledge in the labs by building increasingly more complex digital logic circuits. 	
Course Objective (Indicative Outcomes)	Objective Learning	<ul style="list-style-type: none"> Students should be able to solve basic binary math operations using the logic gates. Students should be able to demonstrate programming proficiency using the various logical elements to design practically motivated logical units. Students should be able to design different units that are elements of typical computer’s CPU.
Course Content	<ul style="list-style-type: none"> Introductory Digital Concepts Digital and Analog Quantities; Binary Digits ; Logic levels; Logic operations <ul style="list-style-type: none"> Number system and Codes Decimal number; Binary number; Hexadecimal number; Octal numbers; Binary Coded Decimal (BCD); Digital codes and parity <ul style="list-style-type: none"> Logic Gates Inverter Gate; AND Gate; OR Gate; NAND Gate; NOR Gate; EX-OR Gate;	



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	<p>EX-NOR Gate</p> <ul style="list-style-type: none"> • Boolean Algebra and Logic Simplification <p>Boolean operations and expressions; Laws and Rules of Boolean algebra; DeMogran’s Theorem; Boolean expression for logic circuit and Truth table; Karnaugh Map (K-map).</p> <ul style="list-style-type: none"> • Combinational Logic <p>AND-OR Logic; AND-OR-Invert Logic; Exclusive-OR Logic; Exclusive Nor Logic</p> <ul style="list-style-type: none"> • Functions of Combinational Logic <p>Basic Adders; Parallel Binary Adder; Comparators; Encoders; Decoders; Multiplexers(Data selector); De Multiplexers; Code Converter; Parity Generators/Checkers</p> <ul style="list-style-type: none"> • Latches and Flip-Flops <p>S-R Latch; Gated S-R Latch; Gated D-latch; Edge-Triggered D-FF; S-R FF J-K FF; T FF</p> <ul style="list-style-type: none"> • Memory and Storage <p>Memory Units ; Memory Addressing ; Read and Write Operations; RAM and ROM</p>		
Learning & Teaching Methodologies	Lectures, tutorials and computer laboratory exercises		
Instructional Materials/Equipment	Computer laboratory		
Course Assessment	Type		Weighting (%)
	Final Examination		60
	Mid Term Examination		20
	Assignment		10
	Attendance		10
	Total		100
Recommended Reading	Title	Author	Publisher
	Digital Fundamentals, 8 th Edition,	Thomas L.Floyd	Pearson education
Additional Reading	Digital Logic and Computer Design, 3 rd Edition,	Morris Mano	Pearson education
Other Support Material	A variety of multimedia systems and electronic information resources as prescribed by the lecturer. Various application manuals, URL search and journals.		