INTI INTERNATIONAL UNIVERSITY
COURSE STRUCTURE

PROGRAMME: DIPLOMA IN INFORMATION AND COMMUNICATIONS TECHNOLOGY

1.	**NAME OF COURSE/MODULE: NETWORK DESIGN, TESTING AND IMPLEMENTATION**							
2.	**COURSE CODE: ICT2103**							
3.	**RATIONALE FOR THE INCLUSION OF THE COURSE/MODULE IN THE PROGRAMME :** Programmers need to have a fundamental understanding of concepts and principles in the networking field such as basic networking concepts and standards, types of network, network topology and architecture, OSI model, transmission medium, networking equipment, protocol, troubleshooting network problems and ensuring the integrity and availability of the network.							
4.	**STUDENT LEARNING TIME (SLT)**	**Total Face to Face**					**Total Student Independent Learning Time**	
		L	**T**	**P**	**O**	**A**	**OL**	**IL**
	L = Lecture T = Tutorial P = Practical O= Others A= Assessment OL=Online learning IL= Independent learning	28		28		4	14	86
5.	**CREDIT VALUE:** 4							
6.	**PREREQUISITE** (if any): ICT1105							
7.	**LEARNING OUTCOMES:** On completion of the course, students will be able to: 1. Analyse the organization's Business goals, technical goals, design and test and document a network. 2. select and justify the appropriate connecting and internetworking devices and explain their functions.. 3. choose an appropriate protocol for the real world networks. 4. Analyse and choose the WAN connectivity							
8.	**SYNOPSIS:** This module is organized into practical steps on designing network right from understanding the organisation's requirement, design phases, selecting appropriate technologies for the implementation, testing and completing network design documentation.							
9.	**MODE OF DELIVERY:** Lectures, Practical, Tutorials. Lecture, group discussions and tutorials are conducted both face to face and online							
10.	**ASSESSMENT METHODS AND TYPES:**							

Method	Types	Weightage (%)
Continuous Assessment	Test	20
	Lab Tutorials	20
	Assignments	20
Summative Assessment	Final Examination	40

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11. **CONTENT OUTLINE OF THE COURSE/MODULE AND THE SLT PER TOPIC:**

Sessions	Topics	LO	L	T	P	OL	Total		
							O	A	IL
1-2	**Analyzing business goals** Methodology, Goals, Analysing Business Constraints		2		2	1			
3-4	**Analyzing Technical Goals and Constraints**-Scalability, Availability, Network Performance, Security		2		2	1			
5-6	**Characterizing the Existing Network** -Characterizing the Network Infrastructure and tools used, , Health of the Existing Internetwork,		2		2	1			
7.8	**Characterizing Network Traffic** Characterizing Traffic Flow, load, and Behaviour		2		2	1			
9-10	**Designing a Network Topology** Hierarchical and Redundant Network Design, VLANs, WAN, Topologies		2		2	1			
11-14	**Designing Models for Addressing and Naming** - Assigning Network Layer Addresses, Hierarchical address design, Assigning Names in NetBIOS and IP environment		4		4	2			
15-18	**Selecting connecting and internetworking devices** – Hup, repeater, Switch, routers, Access Points, Firewall		4		4	2			
19-22	**Routing Protocols** – types, classification, Implementation of Routing Information Protocol.		4		4	2			
23-26	**WAN topology and protocols** - PPP, ISDN, DSL, WAN, Leased lines, Frame Relay and VPN		4		4	2			
27-28	**Testing and Documentation** – Industry tests, prototype test, and tools and documentation procedure		2		2	1			
	Final Examination								
	TOTAL		28		28	14		4	86

Lecture (L), Tutorial (T), Practical (P), Other (O), Assessment (A), Online Learning (OL); Independent Learning (IL); Learning Outcome (LO)

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12. **Main reference(s) supporting course:**

- Priscilla Oppenheimer (2011), Top-Down Network Design (3rd Edition), Cisco Press, ISBN: 978-1587202834

ADDITIONAL REFERENCES (at least 2)::

- Andrew S. Tanenbaum and David J. Wetherall(2014) , Computer Networks (7th Edition),Publisher: Prentice Hall. ISBN: 0132126958, 9780132126953
- William Stallings (2014) , Data and Computer Communications (10th Edition), ISBN-13: 978-0133506488, Publisher: Pearson

13. **OTHER ADDITIONAL INFORMATION** (if any):

Final Examination Format
Duration: 2 hours
Section A: Answer TWO compulsory questions.
Section B: Answer any TWO out of THREE questions.
All questions carry equal marks

Grading Scale
A+ (90-100), A (80-89), A– (75-79), B+ (70-74), B (65-69), B– (60-64), C+ (55-59), C (50-54), C– (45-49), D (40-44), F (0-39).
Resit Pass (50-100), Resit Fail (0-49).

Laboratory Work Specification

Week	Practical Work
1	Setting out star topology
2	Design of peer-to-peer network
3	Design of server based network
4-5	Troubleshooting the network connectivity
6-7	Managing hardware and device drivers
8	Installation of stacked switches
9	Study on router and the interfaces
10	Basic configuration of router
11-12	Internetworking of small networks
13-14	Basic troubleshooting of routers

Important Note:
A student who obtains a grade C- (45 -49 marks) in a 100% coursework module is required to resubmit the coursework component determined by the lecturer and ascertained at the Exam Board. Resubmission marks will be capped at a maximum of 50 marks or a grade C.

A passing mark can only be achieved when the student attempts both the coursework and final exams.

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