INTI INTERNATIONAL UNIVERSITY
COURSE STRUCTURE

PROGRAMME: DIPLOMA IN INFORMATION AND COMMUNICATIONS TECHNOLOGY

1.	NAME OF COURSE/MODULE: FUNDAMENTALS OF NETWORKING
2.	COURSE CODE : ICT1105

3.	RATIONALE FOR THE INCLUSION OF THE COURSE/MODULE IN THE PROGRAMME: This module focus on fundamental issues in 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. To expose the students to understand the networking system in real world.

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(Lab) O= Others A= Assessment OL=Online learning IL= Independent learning	28		14		4	14	100

5.	CREDIT VALUE: 4
6.	PREREQUISITE (if any): NONE

7.	LEARNING OUTCOME: On completion of the course, students will be able to: 1. Describe the concepts of data communications and its standards, differentiate types of network and network topologies and describe OSI model, IEEE networking specifications. 2. Identify signalling methods, data modulation, transmission direction, throughput and bandwidth, baseband and broadband and transmission flaws 3. Describe Ethernet, Token Ting, FDDI for LAN and circuit switching, packet switching for WAN and also differentiate the networking hardware such as NIC, repeaters, hubs, bridges, switches, routers, gateways. 4. Troubleshoot simple network related problems with troubleshooting methodology and troubleshooting tools and employ corrective measures against virus threat, fault tolerance, data backup and disaster recovery.

8.	SYNOPSIS: This course introduces the architecture, structure, functions, components, and models of the data communication network such as Internet and other computer networks. The principles and structure of IP addressing and the fundamentals of Ethernet concepts, media, protocols and operations are introduced to provide a foundation for designing and troubleshooting a small network.
9.	MODE OF DELIVERY: Lectures, Laboratory and Online Learning.

10.	ASSESSMENT METHOD AND TYPES :

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

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	**Introduction** Networks, Impact on network on real life, Types of networks, usage of networks		2			1			
3-4	**Networking Standards and the OSI Model** Networking standard organizations, the OSI 1 and TCP/IP model		2			1			
5-6	**Reference Models** Functions of various layers of OSI and TCP/IP protocol suite. Mapping on both models, comparision		2		2	1			
7-10	**Signal Transmission** Analog and digital signalling, data modulation, transmission mode throughput and bandwidth, baseband and broadband,		4		2	1			
11-12	**Networking Media** Various medium characteristics, implementation and installation challenges.		2		2	1			
13-14	**Network Protocols** Transmission Control Protocol (TCP) and User Datagram Protocol (UDP). Internet Protocol (IP)		2		2	1			
15-16	**Networking Hardware** NIC, repeaters, hubs, bridges, switches, routers, gateways, firewalls		2		2	1			
17-18	**Network Topologies** Characteristics of Bus, Ring, Start, hybrid, point-to-point and point-to-multipoint		2		2	1			
19-20	**LAN Access Methods** CSMA/CD for Ethernet(IEEE802.3) and CSMA/CA for wireless LAN (IEEE802.11)		2		2	1			
21-22	**Internet Access, and Remote Connectivity** WAN essentials, PSTN, ISDN, T-Carriers, DSL, 802.16 (WiMAX), remote connectivity, VPN		2			1			
23-24	**Network Troubleshooting** Methodology, Tools and Documentation		2			1			
25-28	**Network Security** Confidentiality, Integrity, Authentication. Various network threats and their countermeasures.		4			1			
	Final Examination								
	TOTAL		28		14	14		4	100

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:**
	1. Richard M. Robert (2011), Networking Fundamentals. Publisher: Goodheart-Willcox Pub. ISBN: 1590704495
	ADDITIONAL REFERENCES (AT LEAST 2):
	1. Andrew S. Tanenbaum and David J. Wetherall(Oct 7, 2010) , Computer Networks (5th Edition), Publisher: Prentice Hall. ISBN-10: 0132126958, ISBN-13: 978-0132126953
	2. William Stallings (2013), Data and Computer Communications (10th Edition), Publisher: Prentice Hall, ISBN-10: 0133506487, ISBN-13: 978-0133506488
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:

Week	Practical Work
1	Install twisted pair cable and RJ-45 connectors
2	Install co-axial cable and BNC connectors
3	Setup straight through cable and cross over cable
4	Configure Network Interface card
5	Setup simple peer-to-peer network under Windows environment
6	Configure file and printer sharing
7	Configure and control Remote desktop

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