NEW ZEALAND INSTITUTES OF TECHNOLOGY AND POLYTECHNIC QUALIFICATIONS IN INFORMATION & COMMUNICATIONS TECHNOLOGY

PRESCRIPTION: DC600 DATA COMMUNICATIONS

AIM OF MODULE:	To enable students to successfully configure communications links and a local area network (LAN), and extend their knowledge of communications networks.
CREDITS:	7
KNOWLEDGE ASSUMED FROM:	DC500 Data Communications
STUDENT LEARNING HOURS:	70
CONTENT REVISED:	2008
PRESCRIPTION EXPIRY DATE:	Nov 2011

Level and Assessment Schedule

TOPICS	Highest Skill Level R	C	A	P	Suggested Assessment Percentage
1. Serial Communications			*		40
2. Local Area Networks			*		40
3. Communications Networks		*			20
					100

LEARNING OUTCOMES

The student will:

A	1	Describe the requirements for serial communications and demonstrate an ability to successfully configure serial communications links
A	2	Describe LAN characteristics and operating principles, the elements necessary for configuring a LAN system and, using a systematic approach, demonstrate an ability to successfully connect and activate a LAN
C	3	Describe the various types of public and private communications networks available for data communications

CONTENT

1 Serial Communications

- A description of serial communications may include references to ITU-T Recommendations V.24/V.28, X.21 and X.21bis and will include the Universal Serial Bus (USB)

- Successfully configuring serial communications links **may** include:
  - 9 and 25 pin D connectors
    - Null modem (may be configured using a breakout box)
    - Terminal emulation program to exchange messages between PCs at various baud rates and to transfer files using a standard protocol; e.g. Kermit, Z-Modem or X-Modem
    - Transfer of a text file from a PC to a terminal, or printer
    - Logging onto a host computer (via a modem, if suitable facilities are available

  - and **will** include:
    - The Universal Serial Bus;
      - Examining the serial bus standard
      - Connecting a variety of peripheral devices to demonstrate plug-and-play capabilities
      - Installing device drivers, as necessary
      - Hot swapping
      - Providing power to low consumption devices

2 Local Area Networks

- LAN characteristics and operating principles will include:
  - comparing the ISO OSI 7 layer model and the IEEE 802 layers

- describing topologies (bus, ring, star), transmission media, and medium access control protocols (Command response, interrupt, CSMA/CD and Token Passing
- Interconnection of networks using bridges, switches, routers and gateways
- Introduction to TCP/IP

➢ Successfully connecting and activating a LAN will include:

- Connecting (cabling) the devices (nodes)
- Configuring and testing the network interface card (NIC)
- Installing, configuring and using network software
- Identifying and rectifying associated problems

3 Communications Networks

➢ A description of networks may include the PSTN, DDN, PSN, Frame Relay, ATM, and the ISDN, or any other current technologies, such as VoIP, the layered approach used (protocols) and how these networks may be structured (multiplexed)

Resources

➢ Data & Computer Communications (8th Edition) by William Stallings. ISBN-13: 978-0132433105 (Published by Prentice Hall, August 12, 2006)

➢ Data Communications and Networking (4th Edition) by Behrouz A Forouzan. ISBN: 0072967757 (Published by McGraw-Hill Science/Engineering/Math, February 9, 2006)

Web Links:

- **USB** http://en.wikipedia.org/wiki/USB
- **USB Implementer's Forum** http://www.usb.org/home