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

PRESCRIPTION: HS600 PC HARDWARE & SKILLS

AIM OF MODULE:	To provide students with sufficient skills and knowledge concerning the operation of personal computers to be employed in a junior role installing PCs and supporting PCs users.
RESTRICTIONS:	As this module has content that overlaps with the content of HM600 students completing this module cannot be awarded a credit for HM600
CREDITS:	7
STUDENT LEARNING HOURS:	70
CONTENT REVISED:	2004
PRESCRIPTION EXPIRY DATE:	Nov 2011

Level and Assessment Schedule

TOPICS	Highest Skill Level R	C	A	P	Suggested Assessment Percentage
1. Hardware & Software	*				70
2. System Configuration		*			15
3. Installation and Support		*			15
					100

LEARNING OUTCOMES

The student will:

C	1	Describe the overall system architecture of a typical PC system including the structure and function of the major hardware and software components and explain how these components interact.
A	2	Describe and use system configuration procedures.
A	3	Remove and replace system components demonstrating safe working and anti-static procedures. Explain how hardware units should be tested to check that they are working correctly.

CONTENT

It is expected that extensive theory will be given to support the learning of the necessary skills.

1 HARDWARE & SOFTWARE

- The evolution the PC architecture.
- Power Supply
- Bus
- Processors
- Support Chips
- Primary Storage
- Interfaces
- Video Sub-systems
- Secondary Storage Devices
- I/O Devices
- ROM-BIOS

2 SYSTEM CONFIGURATION

- Driver software for video and add-on hardware
- Motherboard configuration; jumpers and switches
- Expansion card configuration; hardware & software
- BIOS setup programs
- Flash BIOS upgrading
- Hard disk installation and partitioning procedures

3 INSTALLATION AND SUPPORT

- Anti-static procedures
- Expansion card removal and replacement
- Disk drive removal and replacement
- Memory removal, replacement and upgrading.
- Diagnostic software

NOTES TO TUTOR

- It is envisaged that this module will be taught using PC compatible machines. Suggested detail to include:
- The evolution of the PC architecture and of the Intel 80x86 processor.
- Power Supply
  - System requirements
  - Power supply conditioning (spike protectors, UPS's & SPS's)
- Bus
  - Describe the bus system and give examples of how this is exploited
  - Current implementations of local bus.
- Processors
  - Notable features of processor chips (eg. 8088, 80486, Pentium, Pentium II).
  - The addressing, CPU clock range and data bus width (both internal and external)
  - Operating modes (real mode, protected mode, virtual memory)
- Support Chips
  - Clock generator & PIT
  - PIC (understanding of how interrupts work required)
  - CMOS
  - DMA controller
- Primary Storage
  - Capacity and characteristics
- Interfaces
  - Parallel
  - Serial
  - USB
  - SCSI
  - ATA
- Video Sub-systems
  - Display modes
  - Resolution
  - Bandwith and scan frequencies
  - Memory requirements
- Secondary Storage Devices
  - File system structure (Boot sector, FAT, & directory if DOS studied)
  - Floppy diskettes
  - Winchester disks
  - Cartridge disks
  - Cartridge tapes
  - Optical disks
- I/O Devices
  - Keyboard
  - Mouse
- ROM-BIOS
  - Importance in starting computer
  - Provision of ROM-BIOS functions