SYLLABUS   (2003)

CONCEPTS OF MANAGEMENT COMPUTING

PURPOSE

The primary outcome of this syllabus is to provide students with sufficient conceptual understanding to be able to communicate with IT professional in a meaningful way. As much the material lays somewhat midway between that of a traditional introductory course in pure Information Technology and course in Communication. In terms of the ability to communicate professionally it provides the basic vocabulary in IT terminology. In terms of IT itself it provides an introduction to the fundamentals of the technology. The content has been selected on the basis of what be accessible to a beginner.

The secondary outcome is to develop the ability to make judgements. Students should always ask themselves questions such as "How can this knowledge be used?"

The level of judgement corresponds to the fact that this is an entry-level course. For example, given a simple office scenario, students should be able to select the most appropriate printer for a specific type of task.

It should also be noted that it is intended to be a conceptual (theory) course. It is assumed that students obtain practical experience on computers elsewhere.

PRESCRIBED TEXTBOOK

The following book is written specifically for the course and its contents will form the basis of the examination.

Fundamental concepts of information technology by David Varley published by Future Managers (available from IAC).

This book will be updated annually.

SYLLABUS

1   INTRODUCTION (5%)

1.1	What is a computer	
1.2	The information age	The changing nature of the world of work
		Advantages of the information age
		Problems of the information age
		- transient nature of skills
		- future shock
1.3	The concept of a system	Input, output, processing
		The environment
		Control, feedback

		Entropy, system stress
1.4	Computer systems	Hardware
		Software
		Personnel
		- End users
		- Systems personnel
1.5	Information systems	Data and information
		Input
		Output
		Processing Control
		Storage
1.6	Trends in white collar work	Skills of the information age
		- The ability to learn new skills
		- Flexibility and adaptability
		- Acceptance of the reality of life long learning
		Change from labour to capital intensive activity
		Dot coms and their future and their effects
		Role of enterprise software
		Outsourcing and the effect on employment trends and skills needs
		B2B commerce
		Time compression
		The African context

2. COMPUTER HARWARE (20%)

2.1	Computer hardware	
2.2	Input devices	Keyboard
		Mouse
		Optical devices
		Microphones
2.3	Output devices	Monitor
		Printers and plotters
		Audio devices
2.4	Monitors	Characteristics
		- Resolution
		- Refresh rate
		Ergonomic and health issues
		- Eye strain
		- Stress
		- Effects of electromagnetic radiation
		New technologies
		- LED flat screens
2.5	Printers	Dot matrix
		Inkjet
		Laser
2.6	CPU	The CPU as the brain of the computer
		Machine code instructions
		The clock and the speed of a CPU
		Types of CPUs
2.7	Primary memory	The purpose of primary memory
		Bits and bytes
		ASCII and Uni-code
		Memory capacity
		RAM and ROM

2.8	Secondary memory	Cache memory
		Hard disk drives
		- capacity
		- access time
		- quality
		- formating
		Tape streamers
		CD-ROMs
		DVDs
2.9	Power of a computer	Speed
		- MIPS, FLOPS, MHz
		Memory capacity
		- Mb, Gb
		Number of users
2.10	Classification of computers	Personal computers
		Notebooks
		Palmtops
		Mini-computers
		Mainframes
		Supercomputers
		Embedded computers

3. COMPUTER SOFTWARE (20%)

3.1	Basic software concepts	The stored program concept
		Machine code
		Classification of software:
		- Systems software
		- Application software
3.2	Systems software	Operating systems
		Utilities
		Programming languages:
		- Low level languages
		- High level languages
		- Generations of languages 1Gl to 5 GL
		- Examples of high level languages: COBOL, BASIC, PASCAL, C++, Java
		Compilers and interpreters
3.3	Applications software	Word processors
		Speadsheets
		Databases
		Presentation packages
		Accounting systems
		Project management systems
		Decision support systems
		- Types of decision: Operational. Tactical, strategic
		Communications software
3.4	Automation	Office automation
		Enterprise software

4. DATABASES (20%)

## 5.	NETWORKS (15%)

5.1	Communication concepts	Components of a system
		- Source
		- Destination
		- Channel
		Communication models
		- Analogue
		- Digital
		- Modems
		Data transfer rate
		Protocols
		- TCP/IP
		- IPX/SPX
		- NetBUI
5.2	Communication channels	Channel media
		- Copper wire: Co-ax and UTP
		- Fibre optic
		- Radio
		- Micro-ware
		- Infra-red
		Telephone links
		- Analogue dial-up
		- ISDN
		- Leased analogue
		- Diginet
		Data transfer rate
		Very high speed connections
5.3	Types of networks	LAN
		MAN
		WAN
		Internet
5.4	Network topologies	Bus
		Star
		Ring
5.5	Servers	File servers
		Application servers
		Print servers
		Communication servers
		- IP sharers
		SQL servers
5.6	Network operating systems	Novell
		Windows NT / 2000
		Unix / Linux
5.7	Communications between networks	IP addresses
		Subnet mask
		Computer and network number
		IP packets
		Broadcasts
		Routers

## 6.	THREATS TO COMPUTERS AND SECURITY (10%)

6.1	Threats to computer systems

6.2	Computer viruses and related programs	What is a computer virus
		Types of viruses and relates programs
		How viruses are spread
		Avoiding virus
		Types of virus
		- Macro-viruses
		- Worms
		- Time bombs
		- Logic bombs
		- Trojan horses
		Anti-virus software
		What anti-virus software can do
		Legal issues
6.3	Computer crime	Theft
		Piracy
		Fraud
		- Data diddling
		- Salami slicing
		- CHP
		Hacking
		Data theft
		Misuse of information
6.4	Physical dangers	Natural disasters
		Political and criminal activity
		System problems
		- Component failure
		Power supply problems
		- Blackouts
		- Brownouts
		- Surges
6.5	Protecting systems	Physical security
		Software security
		Backups
		The use of a UPS

7. THE INTERNET AND THE COMPUTER AS A COMMUNICATION DEVICE (10%)

7.1	Internet basic	What is the Internet?
		Origin of the Internet
		Growth of the Internet
		Future of the Internet
		Web sites
		- URLs
		Connecting to the Internet
		- ISPs
		Browsers
		Internet backbone
		Bandwidth
7.2	Communicating across the Internet	Protocols
		Browsing
		Hyperlinks, URL
		Web servers
		HTML
		HTTP
		IP addressing, DNS
7.3	Searching the web	Search engines

7.4	File transfers	FTP
		FTP clients
		Uses of FTP
7.5	E-commerce	What is e-commerce?
		Passive versus interactive web sites
		On-line ordering
		- The catalogue
		- The shopping trolley
		- CNP transactions
		- PSPs
		Security issues
		- Interception of personal data
		- Misuse of personal data
		- Digital certificates
		- Encryption and SSL communication
		E-commerce software
		The use of WAP technology
		B2B transaction
7.6	E-mail	E-mail
		E-mail clients
		Attachments
		Web based e-mail
7.7	Recreational use of the Internet	On-line music
		Downloading music
		On-line radio
		Ethical and legal issues

EXAMINATION

The examination will comprise 100 questions. These questions will be mix of the following:
- Multiple choice with five options, one of which must be selected.
- Multiple choice with five options, two of which must be selected.
- Questions with a single word, phrase of sentence as an answer.
- True / false questions.
- Supply missing word or phrase in a statement.

The examination will be closed book.

Some of the questions will require that students make judgements. In other words the examination is not limited to the simple recall of facts. Students are required to be able to make use of the facts.

No special equipment or calculators will be needed.

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