SYLLABUS

CONCEPTS OF MANAGEMENT COMPUTING

PURPOSE

The primary objective of this syllabus is to provide students with sufficient conceptual understanding to be able to communicate with IT professionals 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 secondary objective 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.

RECOMMENDED TEXTBOOK

Fundamental concepts of information technology by David Varley published by Future Managers

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 Cache memory
2.8	Secondary memory	Hard disk drives - capacity - access time - quality - formatting 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 Spreadsheets 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%)**	
4.1	Basic concepts	Data and information Processing
4.2	Database systems	Function of a database - Capture and storage - Additions, edits, deletions - Manipulations - Reports Report writers

4.3	Database concepts	Tables / files Records Fields Field types: - Text - Date - Numeric - Boolean Range constraints Record access - Sequential access - Random access - Indexed sequential
4.4	Relational databases	Relations - One-to-one - One-to-many - Many-to-one - Many-to-many Normalisation
4.5	Database design issues	Redundancy Integrity Verification Format constraints Unique keys, foreign keys
4.6	Other types of database	Flat Hierarchical Network
4.7	Large database systems	DBMS Data dictionary DDL DML SQL Archiving
4.8	Personnel	DBA Systems analysts Programmers Operators End-users
4.9	Security issues	Access control Authorisation Passwords Access rights User views Audit trails Encryption

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 ing:

- 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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