Cape it syllabus



CARIBBEAN EXAMINATIONS COUNCIL Caribbean Advanced Proficiency Examination Correspondence related to the syllabus should be addressed to: The Pro-Registrar Caribbean Examinations Council Caenwood Centre 37 Arnold Road, Kingston 5, Jamaica, W. I. Telephone Number: (876) 920-6714 Facsimile Number: (876) 967-4972 E-mail address:org Website: www. cxc. org Copyright © 2008 by Caribbean Examinations Council The Garrison, St. Michael 11158 Barbados This document CXC A4/U2/08 replaces CXC A4/U1/01 issued in 2001.

Please note that the syllabus was revised and amendments are indicated by italics and vertical lines. First Issued 1998 Revised 2001 Revised 2008 Please check the website www. cxc. org for updates on CXC's syllabuses. RATIONALE1 AIMS 2 SKILLS AND ABILITIES TO BE ASSESSED2 PRE-REQUISITES OF THE SYLLABUS3 STRUCTURE OF THE SYLLABUS4 UNIT 1: INFORMATIONTECHNOLOGYTHEORY MODULE 1: FUNDAMENTALS OF INFORMATION TECHNOLOGY5 MODULE 2: INFORMATION TECHNOLOGY SYSTEMS9 MODULE 3: INFORMATION AND PROBLEM-SOLVING13 UNIT 2: APPLICATION AND IMPLICATION

INFORMATION MANAGEMENT16 MODULE 1: MODULE 2: USE OF INFORMATION TECHNOLOGY TOOLS19 MODULE 3: SOCIAL, ORGANIZATIONAL AND PERSONAL ISSUES22 OUTLINE OF ASSESSMENT25 REGULATIONS FOR PRIVATE CANDIDATES31 REGULATIONS FOR RESIT CANDIDATES31 ASSESSMENT GRID32 GLOSSARY33 T he Caribbean Advanced Proficiency Examination (CAPE) are designed to provide certification of theacademic, vocational and technical achievement of students in the Caribbean who. having completed a minimum of five years of secondaryeducation, wish to

further their studies. The examinations ddress the skills and knowledge acquired by students under a flexible and articulated system where subjects are organised in 1-Unit or 2-Unit courses with each Unit containing three Modules. Subjects examined under CAPE may be studied concurrently or singly, or may be combined with subjects examined by other examination boards or institutions. The Caribbean Examinations Council offers three types of certification. The first is the award of a certificate showing each CAPE Unit completed. The second is the CAPE diploma, awarded to candidates who have satisfactorily completed at least six Units, including Caribbean Studies.

The third is the CAPE Associate Degree, awarded for the satisfactory completion of a prescribed cluster of seven CAPE Units including Caribbean Studies andCommunicationStudies. For the CAPE diploma and the CAPE Associate Degree, candidates must complete the cluster of required Units within a maximum period of five years. Recognized educational institutions presenting candidates for CAPE towards the award of the Council's Associate Degree in nine categories must, on registering these candidates at the start of the qualifying year, have them confirm in the required form, the Associate Degree they wish to be awarded.

Candidates will not be awarded any possible alternatives for which they did not apply. ? RATIONALE The Information Technology Syllabus for the Caribbean Advanced Proficiency Examination (CAPE) reflects the belief that Information Technology is essential to the economic and social development of the region. The widespread use of Information Technology, the tools and techniques for inputting, processing, storing, outputting, transmitting and receiving information, which was made possible because of improvements in computer and telecommunications technology, has significantly changed society.

A large proportion of business transactions is now performed over computer networks. The Internet and multimedia computers have had a significant impact on the ways in which people work, learn, communicate, conduct business, and on the ways they seek entertainment. The increased integration of computer and telecommunications technology has led to an increased globalisation of the world economy. It is now possible to use a telephone line to transfer information between computers located anywhere in the world.

Moreover, as the world becomes familiar with the potential of Information Technology, people are beginning to realise that many problems and situations which were hitherto thought of as primarily involving physical activities, in fact rely for their solution on the ready availability of relevant information. In order for the Caribbean to participate in and contribute to this new world, it is essential that Caribbean people become familiar with this technology.

This not only implies that we must know how to use the technology from a purely technical point of view; but also means that we must be conscious of the impact of Information Technology. In particular, we must be made aware that the appropriate use of Information Technology can help solve the problems that we are facing in their daily lives, whether they be of an economic, social or personal nature, and that Information Technology provides opportunities for economic development, as well as for further integration, of the region.

However, the increased use of Information Technology also raises a number of ethical, legal and political issues, ranging from questions concerning privacy of information about individuals, to intellectual property rights. The introduction of Information Technology without careful consideration often worsens a problem, rather than solves it. Any decision to turn to Information Technology must, therefore, be preceded by a critical analysis of the strengths and weaknesses of the proposed solution. In addition, Information Technology has made access to information and misinformation far easier.

It is, therefore, crucial that anyone, before using any information, first critically evaluate its reliability. ? AIMS The syllabus aims to: 1. develop an awareness of the importance of information in the solution of many problems; 2. develop a critical attitude to gathering, processing and evaluating information; 3. develop a broad understanding of hardware, software, networks, databases and information systems and their uses; 4. sensitize students to the use of Information Technology in conducting and living their daily lives; 5. evelop an awareness of the ethical, legal and political considerations associated with information technology; 7. assist students in solving real-life problems, using the tools and techniques of the computer and computer-related technologies; 8. encourage students to use information sources and services to retrieve, interpret and communicate information; 9. develop a positive attitude to new and emerging technologies in Information Technology. ? SKILLS AND ABILITIES TO BE ASSESSED

The skills that students are expected to have developed on completion of this syllabus have been grouped under three headings: 1. Knowledge and

Comprehension; 2. Application and Analysis; 3. Synthesis and Evaluation. Knowledge and Comprehension The ability to: | |- recall and grasp the meaning of basic facts, concepts and principles of Information Technology; | | |- identify real-life problems for which Information Technology solutions are appropriate and beneficial. | Application and Analysis The ability to: |- use facts, concepts, principles and procedures in unfamiliar situations; | | |interpret and present data and draw logical conclusions about Information Technology issues; | | |- identify and recognize the relationships between the various components of Information Technology and their impact on society; | | |- recognize the limitations and assumptions of data gathered in an attempt to solve a problem. | Synthesis and Evaluation

The ability to: | |- make reasoned judgements and recommendations based on the value of ideas and information and their implications; | | |- use the computer and computer-based tools to solve problems; | | |- justify and apply appropriate techniques to the principles of problem-solving. | | | | ? PRE-REQUISITES OF THE SYLLABUS

Any person with a good grasp of the Caribbean Secondary Education Certificate (CSEC) Information Technology Syllabus, or its equivalent, should be able to pursue the course of study defined by this syllabus. However, successful participation in the course of study will also depend on the possession of good verbal and written communication skills. ? STRUCTURE OF THE SYLLABUS This syllabus is arranged into TWO Units, each made up of three Modules. Whilst each Module in each Unit is independent, together they form a coherent course of study which should prepare candidates for the world of work and studies at the tertiary level.

UNIT 1: INFORMATION TECHNOLOGY THEORY Module 1-Fundamentals of Information Technology Module 2-Information Technology Systems Module 3-Information and Problem-Solving UNIT 2: APPLICATION AND IMPLICATION Module 1-Information Management Module 2-Use of Information Technology Tools Module 3-Social, Organizational and Personal Issues In order to be successful, students should spend at least 50 hours of the 150 hours per Unit in a computer lab or on a computer at home or in the workplace. UNIT 1: INFORMATION TECHNOLOGY THEORY MODULE 1: FUNDAMENTALS OF INFORMATION TECHNOLOGY GENERAL OBJECTIVES On completion of this Module, students should: 1. develop an understanding of how Information Technology (IT) relates to other disciplines in Computing; 2. develop an understanding and appreciation of data and information, and the distinction between them; 3. develop an understanding of the nature and sources of information; 4. develop an understanding and appreciation of Information Technology and its history. SPECIFIC OBJECTIVES | | CONTENT | | | | | Students should be able to: | | | | | explain the concept of Information Technology; | | Definition and scope of Information Technology; application of tools for | | | | informational purposes. | | | | | describe the relationship between Information Technology and | | Computing, ComputerScience, Software Engineering, Computer Engineering, | | other disciplines in Computing; | | and Information Systems; commonalities and differences between | | | | disciplines. | | | | explain the characteristics of data and information; | | Definition of terms; examples. | | | | Data: include unprocessed, unorganised and discrete (in separate, |||| unrelated chunks), qualitative (opinion-based, subjective) or quantitative || | (measurementbased, objective), detailed or sampled. | | | | | | Information: including

distortion, disguise, reliability, inconsistency, | | | | incomprehensibility, subject to interpretation, value, relevance, | | | | confidentiality, timeliness, completeness, security, shareability, | | | | availability, lifep, information as a commodity, format and medium; | | | Nature and structure of information: strategic, tactical, operational; | | | structured, semi-structured and unstructured. | | | | | | | | | | | | | | | UNIT 1 | | MODULE 1: FUNDAMENTALS OF INFORMATION TECHNOLOGY (cont'd) | | | SPECIFIC OBJECTIVES | | CONTENT | | | | | Students should be able to: | | | distinguish among data, information and knowledge; | | Differences among data, information and knowledge. | | | | | explain information processing; | | | | | | Definition of information processing (input process, output process); | | | | manual versus automated information processing; components of manual | | | | information processing: collect, collate, analyze, present and | | | | disseminate; components of automated information processing: input (data | | | | capture or entry), process (for example, analyze, sort, calculate), store, |||| retrieve, output (present and disseminate); transmit data and information. | | | Interrelationship between data and information through information | | | | processing. | | | | | | Types of manual and automated information systems. | |||| discuss the importance of data and information; || Use of information in decision making: data quality; appropriateness of | | | | data. Nature and structure of information: strategic, tactical, | | | | operational; structured, semi-structured and unstructured. ||| identify ways of representing data and information; | | Data: including character, string, numeric, aural (for example, Morse | | | | Code, musical notes), visual (for example, the individual frames of a | | | | movie, fingerprints); musical symbols. | | | | | | | Information: including text, graphics, sound, video, special purpose | | | | notations https://assignbuster.com/cape-it-syllabus/

(mathematical, scientific and musical notations); graphical | | | representations (graphs and charts); tables. ||||| discuss various types of information sources; | | Types of information sources: including books, journals, catalogs, | | | | magazines, newspapers, online libraries, CD-ROMs, DVDs, electronic | | | | databases, web sites, people, blogs, wikis; advantages, disadvantages of | | | | information sources. | | | | | UNIT 1 | | MODULE 1: FUNDAMENTALS OF INFORMATION TECHNOLOGY (cont'd) | | | | | SPECIFIC OBJECTIVES || CONTENT || || || Students should be able to: || || identify characteristics of information sources; | | Include availability, cost, currency of information, amount of detail | | | (depth), breadth of coverage, reliability, format and medium. | | | | | identify tools used in the entry, retrieval, processing, | | Examples of hardware, software, and communication tools. Tools associated | storage, presentation, transmission and dissemination of | | with the Internet including on-line services; search engines; Usenet, | | information; | | Internet Relay Chat (IRC), telnet, ftp, newsgroups, message board, mailing | | | list, Internet telephony. | | | | justify the tools used in Information Technology; | | Hardware, software and communication tool used in the entry, retrieval, | | | | processing, storage, presentation, transmission and dissemination of | | | | information; advantages and disadvantages. | | | | | outline the history of Information Technology; | | Brief history of computer hardware and software, Internet and | | | telecommunications; categories by size, cost, and processing ability. || || explain the meaning of terms related to telecommunication. || Transmission media, channels, receivers, senders, modulation, bandwidth; || | | telecommuting. | Suggested Teaching and Learning Activities To facilitate students' attainment of the objectives of this Module, teachers are advised https://assignbuster.com/cape-it-syllabus/

to engage students in the teaching and learning activities listed below. 1. Use the Internet to source relevant material. 2. Compile a glossary of terms using the Internet, computer magazines, textbooks and other information sources. This could form the basis of an in-class discussion. 3.

Develop and use diagrams to represent the concepts and relationships contained in the Specific Objectives. 4. Invite resource persons with experience in the innovative use of Information Technology in fields, such as business and entertainment, to speak on relevant issues. 5. Develop manual filing system and compare functions, such as retrieval and sorting, with automated information system. UNIT 1 MODULE 1: FUNDAMENTALS OF INFORMATION TECHNOLOGY (cont'd) RESOURCES | Daley, B. | Computers are your Future, New Jersey: Pearson Prentice Hall, 2007. | | | | Heathcote, P. A Level Computing, Letts, London: Letts, 2005. | | | | Long, L. and Long, N. | Computers: Information Technology in Perspective, New Jersey: | | | Prentice Hall, 2004. | | | | Parson, J. and Oja, D. | Computer Concepts, New York: International Thompson Publishing | | | Company, 2007. | | | | Shelly, G., Cashman, T., and Vermaat, M. | Discovering Computers, New York: International Thompson Publishing | | | Company, 2008. | UNIT 1 MODULE 2: INFORMATION TECHNOLOGY SYSTEMS GENERAL OBJECTIVES On completion of this Module, students should: 1. develop an understanding of the components of Information Technology Systems; 2. develop an appreciation for human computer interaction (HCI); 3. develop an awareness of security measures associated with information technology systems; 4. develop an awareness of the structure of the World Wide Web and its standards and protocols. SPECIFIC OBJECTIVES | | CONTENT | | | | | Students should be able

to: | | | | | describe Information Technology Systems; | Definition; types of Information Technology Systems; examples. ||||| identify the components of an Information Technology | | Hardware, software, network, users: endusers and IT professionals; definitions | | System; | | and examples. | | | | describe the purpose and functions of hardware | | Purpose, functions and types of hardware including input, output, storage, | | components; | | processor and peripheral devices; definitions and examples; interaction between | | | | hardware components. | | | | describe the purpose and functions of software | | Purpose, functions and types of software including application, system (operating| | components; | | systems, language translators, and utilities); proprietary versus open source | | | | software; information systems including embedded systems: monitoring and control | | | | systems; data processing systems; management information systems, decision | | | | support systems, executive information systems; expert systems, data warehouses; | | | | definitions and examples; major input and output from each type of information |||| system, such as data, information, processed transactions, reports including | | | detailed, summarised, exception, ad hoc. | | | | explain the various stages of the system development | | Including feasibility study, analysis, design, development, implementation, | | life cycle (SDLC), and software engineering; | | review; deliverables/output of each stage including system proposal, project | | | plan, various diagrams and charts, information system (software) test plans, |||| conversion plans, documentation including user and technical manuals. |||| UNIT 1 || MODULE 2: INFORMATION TECHNOLOGY SYSTEMS (cont'd) | | SPECIFIC OBJECTIVES | | CONTENT | | | | | Students should be able to: | | | | | | discuss the tools used in the different stages of the | | Including https://assignbuster.com/cape-it-syllabus/

questionnaires, interviews, observation, review/investigation of | ((SDLC); | | printed material, ER diagrams, data flow diagrams, process models, object models, || | decision tables and trees, computer-aided software engineering (CASE) tools, | | | GHANT charts, prototypes, flowcharts, pseudocode, programming languages. | | | | describe the purpose and functions of network | | Purpose, functions and types of networks including local area network (LAN), wide | components; | area network (WAN), metropolitan area network (MAN); virtual private network | | | (VPN); Internet; Intranet; Extranet; configuration; topologies; transmission | | | | media: (wired versus wireless): fibre-optic, Unshielded Twisted Pair (UTP); | | | hotspots, protocols; definitions and examples; network security; firewalls. | | | | explain the roles of users; | | Inclusion of IT professionals, end users: expert users, novice users; definitions | | | and examples. | | | | | compare the various features associated with the | | Features including, speed, efficiency, portability, maintainability, storage, | | components of Information Technology Systems; | | transmission. | | | | | describe the interrelationship etween the components in | Relationship between the components: hardware, software, network, user. | | an Information Technology System; | | | | | | | describe different types of HCI; | | Types of HCI including forms, menu, command line, natural language, graphical | | | | user interface (GUI), speech and direct manipulation. | | | | | distinguish between different types of HCI; | | Types of HCI including forms, menu, command line, natural language, graphical | | | user interface (GUI), speech and direct manipulation. | | | | | describe ways in which a user's characteristics require | | For example, age, education, differently abled and cultural differences, | | adaptation of a user interface to increase | | non-visual interfaces, sensors, accessibility features;

differences. | effectiveness; | | | | | | | UNIT 1 | | MODULE 2: INFORMATION TECHNOLOGY SYSTEMS (cont'd) | | | | | SPECIFIC OBJECTIVES | CONTENT | | ||| Students should be able to: |||| compare various security mechanisms; | | Physical access control versus logical access control measures and devices; | | | | including passwords (characteristics of an effective passwordnot obvious, | | | | length, mixed case, alphanumeric); authentication, encryption, swipe or key | | | | cards, biometric; data integrity. | | | | | explain the meaning of terms related to the security of || For example, data security, passwords, authentication, encryption, data | | Information Technology Systems; | | corruption. | | | | | describe the structure of the World Wide Web (WWW) as | | Hyperlinks, home page, web page versus web site; Hypertext Transfer Protocol | | interconnected hypertext documents; | | (HTTP), universal resource locator (URL), hypertext markup language (HTML), |||| extensible markup language (XML); IP address versus domain name. || | | | discuss Internet standards. | | Hypertext Transfer Protocol (HTTP); Transfer Control Protocol/Internet Protocol | | | (TCP/IP) in terms of specifications, guidelines, software and tools. | Suggested Teaching and Learning Activities To facilitate students' attainment of the objectives of this Module, teachers are advised to engage students in the teaching and learning activities listed below. 1.

Identify a user of a microcomputer system in an officeenvironmentand conduct aninterviewto ascertain which software tool is used by the user and why. Discuss specific features of the software that makes it suited to the given task. Determine if a more appropriate software tool could be used for the task, identify the software tool and explain why it is more appropriate. 2.

Compile a glossary of terms using the Internet, computer magazines, textbooks and other information sources. This could form the basis of an inclass discussion. 3. Identify two examples of a HCI and make a presentation comparing and contrasting those interfaces. 4. Use the example of a person driving a car and interacting with the instruments on the dashboard as an opportunity to introduce HCI. UNIT 1

MODULE 2: INFORMATION TECHNOLOGY SYSTEMS (cont'd) 5. Identify HCI used in different organizations (for example, restaurants, hospitals, recording studios, security firms, scientific labs) and by the student (for example, ipod, gaming consoles, cell phone, web pages) and evaluate these designs based on a set of identified criteria. 6. Develop and use diagrams to represent the concepts and relationships contained in the Specific Objectives. 7. Invite resource persons with experience in the innovative use of Information Technology in business to speak on relevant issues. RESOURCES | Daley, B. | Computers are your Future, New Jersey: Pearson Prentice Hall, 2007. | | | Heathcote, P. | A Level Computing, Letts, London: Letts, 2005. | | | | | Long, L. and Long, N. | Computers: Information Technology in Perspective, New Jersey: | | | Prentice Hall, 2004. | | | | Parson, J. and Oja, D. Computer Concepts, New York: International Thompson Publishing | | | Company, 2007. |||| Shelly, G., Cashman, T., and Vermaat, M. | Discovering Computers, New York: International Thompson Publishing | | | Company, 2008. | UNIT 1 MODULE 3: INFORMATION AND PROBLEM-SOLVING GENERAL OBJECTIVES ON completion of this Module, students should: 1. develop the knowledge, skills and understanding of the problem-solving process; 2. develop an appreciation for the value and importance of information to solve problems.

SPECIFIC OBJECTIVES || CONTENT || || || Students should be able to: || || | | explain the concept of problem-solving; | | Problem-solving as a process; finding solutions to a problem. | | | | describe the stages of the problemsolving process; | | Stages: including define the problem, analyze the problem (using tools, such as | | | | questionnaires, interviews, observation, reviewing documents), identify and | | | | evaluate possible solutions, select and justify the optimal solution, implement, | | | | and review. | | | | | describe the role of information in the solution of | | Identification of the information necessary for the solution of personal, | | real-life problems; | | commercial, scientific and social problems. Categorization of information as | ||| essential, desirable, extraneous or cosmetic in the solution of a problem. |||| explain how information can be used to solve real-life || Criteria for rejecting or accepting a piece of information, including bias, | | problems; | | accuracy, cultural context, completeness, currency of information, refereed and | | | | unrefereed sources, characteristics of information on the Internet. | ||||| analyse the role of information in fulfilling the goals | Information used in decision-making and problem-solving; capitalising on | | of an individual or organization; | | opportunities. | | | | | use data flow diagrams (DFD) to document the flow of | | Use of symbols for data stores, processing, data flow and external entities; | | information within an organization; | | context level DFD and first level detailed DFD. ||||| explain the concept of an algorithm; | | Definition; algorithm as a problem-solving strategy; its role and importance in | | | | the problem-solving process; properties of algorithm. | | | | identify the necessary properties of ' well designed' | | Properties including a general solution to the problem in a finite number of | | algorithms; | | steps, clearly defined and unambiguous, flow of control from one process to |

| | | another. | UNIT 1 MODULE 3: INFORMATION AND PROBLEM-SOLVING (cont'd) | SPECIFIC OBJECTIVES || CONTENT |||||| Students should e able to: |||||| identify ways of representing algorithms; || Inclusion of narrative, flowcharts and pseudocode. |||||| develop algorithms to representproblem solution; || Simple input, output, processing; control structures: sequence, selection, | | | looping and iteration. || || | explain the concept of programming; || Development of computer programs; stages in programme development; programming | | | paradigms; examples of programming languages. ||||| outline the interrelationship(s) between algorithms and || Algorithms as precursor to program development. || programming. ||| Suggested Teaching and Learning Activities To facilitate students' attainment of the objectives of this Module, teachers are advised to engage students in the teaching and learning activities listed below. 1.

Conduct discussion leading to the definition of a problem to ascertain the students' perspectives of the problem. Give feedback on the perspectives by identifying problems in different scenarios. For example, a farmer getting rid of a pest affecting his crop. 2. Emphasis should be placed on the fact that most if not all problems have an information component. For example, the information the farmer would need to get rid of the pest affecting his crop would be the type of pest, what are its natural enemies, what would be the effect on his crop of using a particular pesticide or a natural enemy of the pest. 3. Visit business places to observe how Information Technology is used to address problems faced by the organisation. 4.

Invite professionals, artists, and others to make presentations to students to give additional perspectives on issues relevant to their studies. Encourage

students to make presentations to persons outside of the school system, who can evaluate a comment on the presentations as well as answer the

students' questions. 5. Invite professionals, artists, and others to make presentations to students to give additional perspectives on issues relevant to their studies. Encourage students to make presentations to persons outside of the school system, who can evaluate a comment on the presentations as well as answer the students' questions. UNIT 1 MODULE 3: INFORMATION AND PROBLEM-SOLVING (cont'd) 6.

Choose a physical activity, such as a sport, to demonstrate how the use of information can be an effective tool or mechanism in ensuring a desired outcome, such as improved performance or success over competitors. 7. Develop a set of scenarios in which there are either opportunities or problems encountered by an organization. Students are required to (a) identify a problem, (b) formulate a problem statement, (c) suggest two possible solutions, and (d) recommend one of the solutions and justify the choice. 8. Adopt a single DFD notation style and have students complete several exercises to become familiar with that style, for example, Gane and Sarson. Present data flow diagramming errors and have students label these with the relevant terms.

For example, black hole - process with only input data flow, a process with only output data flow from it; data stores or external entities that are connected directly to each other, in any combination; incorrectly labeling data flow or objects, some examples are: i) labels omitted from data flow or objects; ii) data flow labeled with a verb; iii) processes labeled with a noun. 9. Work in groups to address problem-solving through the development of

algorithms and the use of pseudocode to solve those problems. This activity should ensure that all elements are practiced. RESOURCES | Daley, B. | Computers are your Future, New Jersey: Pearson Prentice Hall, 2007. [] [] Heathcote, P. A Level Computing, Letts, London: Letts, 2005. | | | | | Long, L. and Long, N. | Computers: Information Technology in Perspective, New Jersey: | | | Prentice Hall, 2004. | | | | Parson, J. and Oja, D. | Computer Concepts, New York: International Thompson Publishing | | | Company, 2007. | | | | Shelly, G., Cashman, T., and Vermaat, M. | Discovering Computers, New York: International Thompson Publishing | | | Company, 2008. | ? UNIT 2: APPLICATION AND IMPLICATION MODULE 1: INFORMATION MANAGEMENT GENERAL OBJECTIVES On completion of this Module, students should: 1. acquire the knowledge needed to organize and manage data, making it meaningful to an organization; 2. demonstrate the skills needed to organize and manage data within a database. SPECIFIC OBJECTIVES | | CONTENT | | | | | Students should be able to: | | | | | differentiate among terms used in Information | | For example, fields, records, tables, files, database and database management | | Management; | | system. | | | | | | explain how files and databases are used in | | Uses: including store, organize, search, retrieve; eliminate redundancies; data | | organizations; | | mining, data marts and data warehouses. | | | | | explain how data storage and retrieval have changed over || Concept of the terms; history of storage devices; formats of data (from | | time; | | text-based to multimedia); volumes to be stored; compression utilities; access || || method and speed. || || explain the advantages of using a database approach | | Advantages including speed, efficiency, cost; data quality: completeness, | | compared to using traditional file processing; | | validity, consistency, timeliness and accuracy;

data handling, data processing. | | | | describe the different types and organization of files | | File types including master and transaction files; file organization including | | and databases; | | serial, sequential, random or direct, indexed sequential database types including | | | personal, workgroup, department and enterprise databases; database organization []] | including hierarchical, relational, network and object-oriented. | | | | describe data flow diagrams (DFD); | | Define DFD; identify and describe the four symbols (elements): entity, process, |||| data store, data flow; identify and describe the various levels of DFDs including || | context level DFD and first level detailed DFD. | UNIT 2 MODULE 1: INFORMATION MANAGEMENT (cont'd) | SPECIFIC OBJECTIVES | | CONTENT | | | | Students should be able to: | | | | | explain how the growth of the Internet impact on data | Use of symbols, context level DFD and first level detailed DFD to illustrate the | | handling and data processing; | | information flow. | | | | | | explain how the absence of data quality, accuracy, and | | Including loss of revenue, sales, competitive advantage, customers; poor | | timeliness will impact on organizations; | | decision-making; missed opportunities; impact on problem solutions. | | | | | explain the concept of normalization; | | Definition of normalisation; attribute redundancy and anomalies; normal forms: | | | including first normal form (1NF), second normal form (2NF), third normal form | | | (3NF); keys: primary, foreign and composite (or compound or concatenated); | | | | partial and non-key dependencies; relationships, use of entity-relationship | | | | diagrams (ERD). | | | | apply normalisation rules to remove normal form | | To 1NF, 2NF and 3NF; removal of attribute redundancy and anomalies, such as | | violations; | | repeating groups of data (or attributes), partial and non-key dependencies. | | | | | explain how

normal for relations impact databases; || Including improve performance, data consistency, data integrity. |||||| construct a database. | Including forms; reports, queries, tables, tuples, relationship links, enforcing |||| referential integrity, updates or deletions, use of foreign keys, use of macros, |||| SQL, data validation and verification strategies; used to analyse data

and | | | | provide multiple viewing and reporting of data. | | | | | Suggested Teaching and Learning Activities

To facilitate students' attainment of the objectives of this Module, teachers are advised to engage students in the teaching and learning activities listed below. 1. Choose a single scenario to which students can easily relate, such as a library system or student registration system, and use it throughout the Module to develop understanding of the specified concepts and techniques. UNIT 2 MODULE 1: INFORMATION MANAGEMENT (cont'd) 2. Ask students to complete several exercises on the normalisation process involving the use of standard notations to remove normal form violations. 3. Compile a glossary of terms using the Internet, computer magazines, textbooks and other information sources.

This could form the basis of an in-class discussion. 4. Students should design and construct a database. 5. Develop and use diagrams to represent the concepts and relationships contained in the Specific Objectives. RESOURCES | Daley, B. | Computers are your Future, New Jersey: Pearson Prentice Hall, 2007. | | | | Heathcote, P. | A Level Computing, Letts, London: Letts, 2005. | | | | Long, L. and Long, N. Computers: Information Technology in Perspective, New Jersey: | | Prentice Hall, 2004. | | | Parson, J. and Oja, D. | Computer Concepts, New York: International Thompson Publishing | | |

Company, 2007. | | | | Shelly, G., Cashman, T. and Vermaat, M. | Discovering Computers, New York: International Thompson Publishing | | | Company, 2008. | UNIT 2 MODULE 2: USE OF INFORMATION TECHNOLOGY TOOLS GENERAL OBJECTIVES On completion of this Module, students should: 1. develop confidence in selecting and using productivity tools to solve reallife problems; 2. use their knowledge and understanding of a variety of software tools and apply their use to various situations; 3. develop the competence to present information in the appropriate manner; 4. use information critically; 5. develop an awareness of emerging technologies. SPECIFIC OBJECTIVES || CONTENT || || || Students should be able to: || || | | explain reasons for the use of IT tools; | | Enhanced speed, accuracy, reliability, efficiency, flexibility, communication, | | | | presentation of information, integration of processes, decision making; storage | | | | and retrieval of large volumes of data; manageability of task; pressures from []] | clients, competitors and suppliers. | | | | | explain the functions and uses of the major types of | | Examples of different types of software packages and their function and uses. | | software tools; | | Including Financial Packages, Software Development Tools, Statistical Tools, Word | | | Processors, Spreadsheets, Presentation Tools, and Database Management Tools, | | | | Desktop publishing, graphics and personal information management. |||||| explain where a word processing tool is appropriate; | | Main purpose and uses; significant features of the tool. ||||| explain where a spreadsheet tool is appropriate; || Main purpose and uses; significant features of the tool. ||| | | | explain where a presentation tool is appropriate; | | Main purpose and uses; significant features of the tool. | | | | | explain where a database management system tool is | | Main purpose and uses; significant features of

the tool. | appropriate; | | | | | | | jon | | UNIT 2 | | MODULE 2: USE OF INFORMATION TECHNOLOGY TOOLS (cont'd) | | SPECIFIC OBJECTIVES | | CONTENT | | | | | Students should be able to: | | | | | | use IT tools to solve real-life problems; | | Including hardware, application software, and communication tools; main purpose | | | and uses of tool; significant features of the tool. | | | | | justify the use of IT tools to solve real-life problems; || Criteria for selection including the nature of the solution, type of analysis | | | | required (calculations, formatting, graphing), type of data, type of storage, | | | | type of access method, type of processing, type of reports (detailed, summary, | | | | preformatted, ad hoc). | | | | | use the most appropriate format to display or present | | Format including text, graphics, sound, video, graphs, charts and tables. | information; | | | | | | | use appropriate information sources to retrieve and | | Criteria for selection, appropriateness for task, types of information sources: | | disseminate information for a particular task; | | including books, journals, catalogs, magazines, newspapers, online libraries, | | | | CD-ROMs, DVDs, electronic databases, web sites, and people. |||||| justify the acceptance or rej