THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF EDUCATION AND VOCATIONAL TRAINING

INFORMATION AND COMPUTER STUDIES SYLLABUS FOR SECONDARY EDUCATION FORM V - VI

2010

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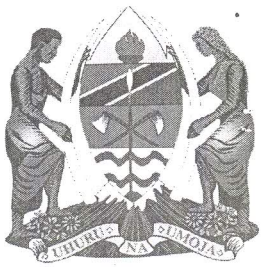

INFORMATION AND COMPUTER STUDIES SYLLABUS FOR ADVANCED LEVEL SECONDARY EDUCATION

FORM V - VI

2010

ISBN: 978-9976-61-270-7

First Edition: 2009
Second Edition: 2010

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1.0 INTRODUCTION

1.1 Background Information

In the 1997 secondary school curriculum the Computer Studies (CS) course was treated as optional subject for both O-level and A-level. The review of O-level curriculum in 2005, introduced Information and Computer Studies (ICS) syllabus for form I-IV. This review of the O-level curriculum created a room for introduction of A-level ICS syllabus. Unlike the CS syllabus, the ICS syllabus has observed a change in paradigm from content based to a competence based curriculum. Moreover, the syllabus takes into consideration the requirements of Secondary Development Plan (SEDP)

1.2 Rationale of the Review

Information and Communication Technology has an increasingly significant impact, and such broad implications for individuals, groups and entire nation. Students must be prepared to understand, use and apply ICT in effective, efficient and ethical ways. This ICS syllabus for A-level aims at addressing the existing curriculum gaps and shortcomings by incorporating ICT in the curriculum.

The Information and Computer Studies syllabus for form V-VI is a new syllabus that has captured new developments in Information and Communication Technology. It has been developed to meet current needs of learners in advanced secondary school education in acquiring knowledge and skills. The ICS subject is a subsidiary subject which will be taken by all students at advanced level except those who take computer science as a principal subject. However, Computer science students can take it as an option.

The Information and Computer Studies (ICS) syllabus will provide a broad perspective on the nature and use of Information and Communication Technology (ICT) and how to apply a variety of technologies. By acquiring knowledge and skills on the new technology will serve today's students in entry-level work and beyond, further study and lifelong learning, and their personal lives as inquisitive, reflective, perceptive and caring citizens.

2.0 OBJECTIVES OF EDUCATION IN TANZANIA

The general aims and objectives of education in Tanzania are to:

a) guide and promote the development and improvement of the personalities of the citizens in Tanzania, their human resources and effective utilisation of those resources in bringing about individuals and national development.

b) promote the acquisition and appreciation of the culture, customs and traditions of the people of Tanzania.

c) promote the acquisition and appropriate use of literacy, social, scientific, vocational, technological, professional and other forms of knowledge, skills and attitudes for the development and improvement of the condition of man and society.

d) develop and promote self-confidence and an inquiring mind, and understanding and respect for human dignity and human rights and readiness to work hard for self-advancement and national development.

e) promote and expand the scope acquisition, improvement and upgrading of mental, practical, productive and other skills needed to meet the changing needs of industry and economy.

f) enable every citizen to understand the fundamentals of the National Constitution as well as the enshrined human and civic rights, obligations and responsibilities.

g) promote love for work, self and wage employment and improved performance in the production and service sectors.

3.0 AIMS AND OBJECTIVES OF SECONDARY EDUCATION

In Tanzania, secondary education refers to post-primary formal education offered to learners who successfully complete seven years of primary education and have met the requisite entry qualifications.

The aims and objectives of secondary education are to:

a) consolidate and broaden the scope of baseline ideas, knowledge, skills and attitudes acquired and developed at the primary educational level

b) enhance the development and appreciation of national unity, identity and ethic, personal integrity, respect for human rights, cultural and moral values, customs, traditions and civic responsibilities and obligations.

c) promote linguistic ability and effective use of communication skills in Kiswahili and English.

d) provide opportunities for the acquisition of knowledge, skills, attitudes and understanding in prescribed or selected fields of study.

e) prepare students for tertiary and higher education, vocational, technical and professional training.

f) inculcate a sense and ability for self-study, self-confidence and self-advancement in new frontiers of science and technology, academic and occupational knowledge and skills.

g) prepare the students to join the world of work.

4.0 GENERAL COMPETENCES FOR THE SUBJECT

By the end of two years course, the student should have ability to:

1. Communicate information effectively using symbols, graphs, diagrams, pictures, video and text.
2. Acquire, organise and synthesise information from multiple sources.
3. Apply principles, knowledge and skills of ICT in solving problems in daily life.
4. Use information and communication technology (ICT) in data and information processing.
5. Apply ICT to develop desire and interest for life long learning and personal growth.
6. Identify and control the impact of ICT on environment and health.
7. Apply and relate ICT knowledge and skills to personal, moral and socio-cultural context.

5.0 GENERAL OBJECTIVES FOR THE SUBJECT

By the end of two years course, the student should be able to:

1. Demonstrate skills of data processing and interpretation.
2. Identify the role of ICT in social-economic and cultural development of the society.
3. Demonstrate an understanding of variety of ICT packages.
4. Understand legal, ethical and security issues related to ICT.
5. Identify issues related to the impact of ICT on environment and society at national and global context.
6. Identify and analyse problems using critical and creative thinking.
7. Develop practical skills in using ICT resources for self confidence and self-advancement.
8. Demonstrate an understanding of using multimedia.

6.0 ORGANIZATION OF THE SUBJECT SYLLABUS

This ICS syllabus for Advanced Secondary Education level is a new subsidiary subject to be offered with other combinations to give necessary technological skills to students especially in information and communication technology. The following are some areas that have been considered:

- General competences for the whole course.
- Competences for each level, that is, Form V and Form VI.
- General objectives for the whole course
- Objectives for each level, that is, Form V and Form VI.
- Suggested areas for assessment
- Number of periods per sub-topic

6.1 Subject Level Competences

Competences are skills, knowledge and attitudes attained by learners after learning process. Competences have been stated for each class/level of ICS course. The class level objectives are derived from the class level competences.

6.2 Subject Level Objectives

For each competence intended to be achieved, one or more objectives have been stated in order to achieve it. The general objectives for Form V to Form VI are stated in the general terms to indicate the scope of content to be covered within each level.

6.3 Content Matrix

The syllabus matrix has the following areas:

- Topic
- Subtopic
- Specific objective
- Teaching and learning strategies
- Teaching and learning resources
- Assessment
- Number of periods

6.3.1 Topics/Sub-topic

The topics included in the syllabus have been derived from class level competences and objectives. Also content in some topics have integrated cross-cutting issues (CCI). The topics have been arranged to attain logical order, starting from simple to most difficult ones. Both block and spiral arrangements of topics have been adopted.

6.3.2 Specific Objectives

Each sub-topic has one or more specific objectives. These specific objectives are the expected outcomes in classroom instruction. They also reflect the process to attain competences within the cognitive, affective and psychomotor domains.

6.3.3 Teaching and Learning Strategies

The columns of teaching and learning strategies indicates what the teacher and students are expected to be doing in the process of teaching and learning. Students are encouraged to work in small groups for maximum participatory and cooperative learning. The teacher shall assume

the role of a facilitator to promote, guide and help students' learning activities. The whole teaching and learning process should be participatory and interactive, where the student learns by doing a series of logical activities. Home assignments and mini-projects are used to strengthen competences for independent learning.

These suggested teaching and learning (T/L) strategies are not exhaustive. You are strongly advised to use them plus any other strategies which are applicable, relevant and suitable to the T/L environment.

6.3.4 Teaching and Learning Resources

In the teaching of ICS a variety of teaching-learning resources will be needed. The teaching and learning process emphasized is student centred and activity oriented. Students are expected to be engaged in variety of activities which culminates into learning. The subject has also incorporated cross-cutting issues in relevant topics. The use of ICT resources is inevitable, Students should be provided with computer laboratory, library and Internet access for effective learning of this course. Much of the time should be allocated on practical work. Therefore, you are strongly advised to use the resources listed. Under different circumstances, the teacher is also advised to use other relevant and more contextualized resources.

6.3.5 Assessment

For every specific instructional objective, there is/are suggested question(s) or area(s) for assessment. Formative and summative assessments should be geared towards mastery of the competences and skills developed within the course.

6.3.6 Number of Periods

The column for number of periods provides a proposed duration to be used to teach a given sub-topic. The suggested number of periods takes into account the time needed to adequately cover the sub-topic. However, some topics need more time than others.

7.0 INSTRUCTIONAL TIME

This syllabus is to be covered in two academic years, each having approximately 194 instructional days including two weeks reserved for mid-year and annual examinations. The suggested number of periods for teaching this syllabus is 4 periods of 40 minutes each per week. The teacher is advised to spend at least the suggested time allocated in classroom instruction and practical

work. Whenever, possible the teacher my use extra time especially for practical work. Lost instructional time should always be compensated for.

8.0 ASSESSMENTS IN THE SUBJECT

The table below shows the type of assessment and the accompanied assessment measures to be used. The assessment measures listed in the table contributes to continuous and final assessments of the student's achievement. The frequency for each assessment measure has been indicated with the weight in %. You are therefore, strongly advised to apply a wide selection of assessment measures in order to develop students' ability for the master of the subject matter during the T/L process.

TYPES OF ASSESSMENT	Assessment measure	FREQUENCY				WEIGHT
		FORM V		FORM VI		%
		TERM 1	TERM 2	TERM 1	TERM 2	
Continuous assessment	1. Test	2	2	2	-	10
	2. Individual assignment	1	1	-	1	5
	3. Practical	1	1	1	1	10
	4. Multimedia based task	-	-	1	-	5
	5. Project	-	-	1	-	5
	6. Terminal examination	1	1	1	-	15
Examinations	7. National examination	-	-	-	1	50
Total weight						100%

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FORM V

Class Competences

By the end of Form V the student should have the ability to:

1. Use appropriate symbols, graphs, pictures, text, diagrams and video to communicate effectively.
2. Use computer applications to process data and information.
3. Apply knowledge acquired in ICS to enhance learning in other subjects.
4. Use a variety of information and communication technologies to access, analyze, interpret, synthesize, apply and communicate information.

Class Objectives

By the end of Form V student should be able to:

1. Distinguish between data and information.
2. Describe various sources of information.
3. Develop skills of finding and processing information to solve a particular problem.
4. Demonstrate the knowledge and skills in the use of computer and related technologies
5. Develop an understanding of organisation of computer systems including software, hardware and communication.
6. Understand important issue of a technology based society and exhibit ethical behaviour in the use of computers.
7. Discuss different networking terminologies

TOPIC/SUB - TOPIC	SPECIFIC OBJECTIVES	TEACHING/LEARNING STRATEGIES	TEACHING/LEARNING RESOURCES	ASSESSMENT	ESTIMATED NUMBER OF PERIOD
1.0 FUNDAMENTALS OF DATA PROCESSING 1.1 Information processing	By the end of this sub-topic the student should be able to:- a. Differentiate data, information and knowledge.	(i) Students in groups to brainstorm the meaning of data, information and knowledge. (ii) The teacher to guide the students to discuss on how to differentiate data, information and knowledge.	• Manila sheets • Mark pens • Posters to illustrate differences between information and knowledge • Illustrations/pictures on Books of Information Technology	Is the student able to differentiate data, information and knowledge?	1
	b. Identify characteristics of data.	(i) Students in groups to discuss and identify the characteristics of data and data sources. (ii) Teacher to lead students to discuss characteristic of data and the direct and indirect data sources.	• Manila sheets • Mark pens • A4 paper • Any textbook on information knowledge and data • Example of class registration records	Is the student able to:- - Identify sources of data? - Identify characteristics of data?	2
	c. Describe the data processing cycle	(i) Teacher to use question and answer to ask students to explain the data processing. (ii) Students in groups to discuss the term input, processing and output by using daily life examples. (iii) Teacher to lead students to discuss the data processing cycle as data collection, data input, processing and output. (iv) Students in groups to discuss data processing	• Manila sheets • Mark pens • Pictures of computers, typewriter • Computer and its peripherals. • Data collection input example: - Data forms - Questionnaire	Is the student able to: - Distinguish between input, processing and output? - Describe the stages in data processing cycle? - Differentiate the types of data processing methods? - Explain the importance of quality,	5

TOPIC/SUB - TOPIC	SPECIFIC OBJECTIVES	TEACHING/LEARNING STRATEGIES	TEACHING/LEARNING RESOURCES	ASSESSMENT	ESTIMATED NUMBER OF PERIOD
		methods (manual data processing, mechanical data process and electronic data processing). (v) Teacher to guide students to discuss the importance of quality and correctness of information. (vi) Student in groups to discuss the importance of quality, correctness and accurate of information.		correctness and accuracy of data and information?	
	d. Explain the concept of communication.	(i) Teacher to use think-pair share strategy to explore the meaning of communication. (ii) Students to explore the correct meaning of communication.	• Manila sheet • Marker pen • Poster showing various meaning of communication	Is the student able to explain the meaning of communication?	1
	c. Identify important aspect of data and information in communication	(i) Teacher to guide students to mention the constituent components for effective communication (Sender, medium, and receiver). (ii) Students to explain the components of communication. (iii) Teacher to assist students to discuss the importance of effective communication (iv) Students in groups to	• Manila sheets • Mark pens • Poster of different communication equipments.	Is the student able to identify important aspect of data and information in communication?	3

TOPIC/SUB - TOPIC	SPECIFIC OBJECTIVES	TEACHING/LEARNING STRATEGIES	TEACHING/LEARNING RESOURCES	ASSESSMENT	ESTIMATED NUMBER OF PERIOD
		discuss the causes and effect of interference in communication.			
1.2 Computer systems basics	By the end of this sub-topic the student should be able to:- a. Describe a computer system.	(i) Teacher use questions and answers technique for students to explain the meaning of computer. (ii) Teacher to guide students to discuss on how to describe computer as a system.	• A picture of computer system. • Manila sheets. • Mark pen. • Computer system	Is the student able to describe a computer system?	2
	b. Identify the external components of computer system	(i) Teacher to lead the students to discuss the external parts of computer. (ii) Students to demonstrate the external parts of computer system.	• Poster with different picture of external parts of computer. • Manila sheets • Marker pen • External parts of computer	Is the student able to identify the external parts of computer system?	2
	c. Identify and explain the internal component of computer system.	(i) Teacher to leads students to discuss the function of internal parts of computer. (ii) Students to demonstrate the functioning of the internal parts of computer systems.	• Poster with different pictures of internal parts of computer. • Manila sheets • Marker pen • Internal parts of a computer	Is the student able to identify and explain the functioning of the internal parts of computer system?	2
	d. Explain how data flows around a computer system.	(i) Teacher to explain and presents a simple diagram of IPO (Input, Processing, Output) with storage part.	• Manila sheets • Marker pen • Parts of computer system	Is the student able to explain how data flows around a computer system?	2

TOPIC/SUB - TOPIC	SPECIFIC OBJECTIVES	TEACHING/LEARNING STRATEGIES	TEACHING/LEARNING RESOURCES	ASSESSMENT	ESTIMATED NUMBER OF PERIOD
		(ii) Student in groups to discuss the possible data flows through the computer using the block diagram given.			
	e. Describe Operating System software.	(i) Students to brainstorm the meaning of operating System software. (ii) Teacher to guide students to discus on the function of Operating System Software. (iii) Teacher to demonstrate the correct uses of Operating System features. (iv) Students to correctly use Operating System features.	• Software packages • Computer installed with an Operating System • Manila sheets • Marker pen	Is the student able to: - Describe Operating System software? - Use Operating System features correctly?	8
2.0 APPLICATION AREAS OF ICT 2.1 ICT application areas	By the end of this sub-topic the student should be able to:- a. Examine different application areas of ICT (education, health, business, scientific, research, rural development).	(i) Students in groups to brainstorm possible areas ICT application areas. (ii) Teacher to lead students to mention various ICT application areas. (iii) Teacher to lead students to discuss the application of ICT in various areas. (iv) Students to explain the application of ICT in various areas	• Manila sheets • Marker pen • A4 paper • Pen/pencil	Is the student able to: - Examine the ICT application ares? - Explain the use of ICT in various areas?	2

TOPIC/SUB - TOPIC	SPECIFIC OBJECTIVES	TEACHING/LEARNING STRATEGIES	TEACHING/LEARNING RESOURCES	ASSESSMENT	ESTIMATED NUMBER OF PERIOD
	b. Describe advantages and disadvantages of using ICT in industry, business, agriculture, and social services	(i) Teacher to lead students in groups to discuss advantages and disadvantages of using ICT in various areas. (ii) Students to explain the advantages and disadvantages of using ICT in various areas.	• Manila sheets • Mark pen • A4 paper • Pen/pencil	Is the student able to state and describe the advantages and disadvantages of ICT in industry, business, agriculture and social services	2
2.2 Software Applications	By the end of this sub-topic the student should be able to:- a. Describe types of application software.	(i) Students individually to brainstorm the meaning of software application. (ii) Teacher to lead students to discuss the difference between generic, specialized and tailor-made applications software. (iii) Students in groups to categorise the application software	• Posters • Manila sheets • Marker pen • A4 paper • Pen/pencil	Is the student able to: - Describe application software - Identify types of applications software?	2
	b. Select suitable software for specific tasks.	(iii) Students in groups to identify and record the application software used to prepare different task. (iv) Teacher to lead students to discuss on how to select suitable software for particular task.	• Posters • Manila sheets • Marker pen • Software	Is the student able to select suitable software for specific task?	1
	c. Explain when tailor-made software is more appropriate.	(v) Students to brainstorm on advantages and disadvantages of using Tailor -made software. (vi) Teacher to explain	• Marker pen • Posters • Manila sheets	Is the student able to explain the advantages and disadvantages of	1

TOPIC/SUB - TOPIC	SPECIFIC OBJECTIVES	TEACHING/LEARNING STRATEGIES	TEACHING/LEARNING RESOURCES	ASSESSMENT	ESTIMATED NUMBER OF PERIOD
		advantages and disadvantages of using tailor-made software. (vii) Students to come up with example scenarios of tailor- made software use		using tailor made software?	
a. Implication of ICT in the society	By the end of this sub-topic the student should be able to:- a. Explain the social and economic implication of ICT applications.	(i) Students to discuss in small group the impact of ICT application in economic and social aspect. (ii) Teacher to summarize the outcome of the discussion on the impact of ICT application in economic and social aspect.	• Radio • TV • Newspaper • Magazine • Cell phone	Is the student able to explain the social and economic implication of ICT applications?	3
	b. Explain the effects of ICT to privacy, security and access of data issues.	(i) Teacher to explain the meaning of privacy, security and access of data. (ii) Students to examine a case study of effect of ICT to privacy, security and access of data. (iii) Teacher using question and answer to assess the students' understanding of ICT privacy, security and access of data.	• Manila sheets • Mark pen • A4 papers • Pen/pencil • Ant Viruses CDs	Is the student able to explain the effects of ICT to privacy, security and access of data?	2
	c. Identify the legal implication of ICT use.	(i) Teacher to guide students to brainstorm the need of legal protection of data.	• Manila sheets • Marker pen • A4 papers • Pen/pencil	Is the student able to identify the legal protection of data?	1

TOPIC/SUB - TOPIC	SPECIFIC OBJECTIVES	TEACHING/LEARNING STRATEGIES	TEACHING/LEARNING RESOURCES	ASSESSMENT	ESTIMATED NUMBER OF PERIOD
		(ii) Students to discuss important issues required in data protection act. (iii) Teacher to explain on the importance of legal implication of IT.			
	d. Analyse the impact of ICT on environment and health.	(i) Student debate on the impact of ICT on the environment and health. (ii) Teacher to explain the impact of ICT on environment and health. (iii) Teacher to guide the students to discuss on prevention of environmental degradation and health hazards due to ICT uses and wastes. (iv) Students to explain the prevention measures needed to be taken on environmental degradation and health hazards due to ICT uses and wastes.	Used • Cell • TV • Radio • Computers • Newspaper • Magazine • Posters • Communication cables	Is the student able to analyse the impact of ICT on environmental and health?	3
3.0 GENERIC APPLICATIONS SOFTWARE 3.1 Word processing	By the end of this sub-topic the student should be able to:- a. Explain the concept of word processing.	(i) Teacher to explain the meaning of word processing. (ii) Teacher through question and answers to explore the importance of having word processor. (iii) Students to explain the importance of word processor.	• Computer system • Manila sheet • Marker pen • Typewrite • A4 paper • Pen/Pencil	Is student able to explain Word processing	1

TOPIC/SUB - TOPIC	SPECIFIC OBJECTIVES	TEACHING/LEARNING STRATEGIES	TEACHING/LEARNING RESOURCES	ASSESSMENT	ESTIMATED NUMBER OF PERIOD
	b. Identify important features of word processing software.	(i) Teacher to demonstrate the important features of a word processor. (ii) Students to explore the demonstrated features through practical work.	• Word processing software • Computer and its accessories • LCD project	Is student able to identify important features of Word processing software?	1
	c. Create simple document.	(i) Teacher to guide students through practical to create simple document. (ii) Students to perform practical work on creating simple document with basic features of a word processor.	• Word processing software • Computer and its accessories • LCD project	Is the student able to create a simple document using basic features?	6
	d. Identify advanced features of word processing software.	(i) Teacher to demonstrate to students how to identify advanced features of word processing software. (ii) Teacher to demonstrate by using a document on how to use advanced features of word processing software. (iii) Student to create a document using advanced features of word processing software.	• Word processing software • Computer and its accessories • LCD project	Is the student able to identify advanced features of word processing software?	12
3.2 Spreadsheet	By the end of this sub-topic the student should be able to:- a. Explain the concept of spreadsheet.	(i) Teacher to explain the concept of spreadsheet. (ii) Teacher through questions and answers to explore the importance of having spreadsheet. (iii) Student to explain the	• Spread Sheet software • Computer and its accessories • LCD project	Is the student able to explain the concept of Spreadsheet?	1

TOPIC/SUB - TOPIC	SPECIFIC OBJECTIVES	TEACHING/LEARNING STRATEGIES	TEACHING/LEARNING RESOURCES	ASSESSMENT	ESTIMATED NUMBER OF PERIOD
		concept and importance of having spreadsheet.			
	b. Identify important features of spreadsheet.	(i) Teacher to demonstrate basic features of spreadsheet. (ii) Students to repeat after the teacher and mention the basic features of spreadsheet.	• Spreadsheet software • Computers and its accessories • LCD projector	Is the student able to identify important features of spreadsheet?	2
	c. Create simple spreadsheet document.	(i) Teacher to guide the students to use basic features of spreadsheet on the practical work. (ii) Students to perform practical work by using basic features of spreadsheet.	• Spreadsheet software • Computers and its accessories • LCD projector	Is the student able to create a simple spreadsheet document?	6
	d. Identify advanced features of spreadsheet.	(i) Teachers to demonstrate the advanced features of spreadsheet (ii) Students to perform a practical work applying advanced features of spreadsheet.	• Spreadsheet software • Computers and its accessories • LCD projector	Is the student able to identify advanced features of spreadsheet?	12
3.3 Desktop publishing	By the end of this sub-topic the student should be able to:- a. explain the concept of desktop publishing	(i) Students in groups to brainstorm the meaning of desktop publishing (ii) Teacher to lead students to discuss the desktop publishing. (iii) Students in groups to discuss the importance of desktop publishing. (iv) Teacher to guide students to explain the meaning of desktop publishing.	• Desktop publishing software • Computer and its accessories • LCD projector	Is student able to explain the concept of desktop publishing?	1

TOPIC/SUB - TOPIC	SPECIFIC OBJECTIVES	TEACHING/LEARNING STRATEGIES	TEACHING/LEARNING RESOURCES	ASSESSMENT	ESTIMATED NUMBER OF PERIOD
	b. identify important features of desktop publishing	(i) Teacher to demonstrate how to identify basic features of desktop publisher. (ii) Student to do hands on practice to identify basic features of desktop publisher.	• Desktop publishing software • Computer • LCD projector	Is the student able to identify the important basic features of desktop publishing?	2
	c. Create simple publishing document	(i) Teacher to demonstrate how to create a textual publishing document by using basic features. (ii) Students to imitate similar document through practical work.	• Desktop publishing software • Computer • LCD projector	Is the student able to create simple publishing document?	6
	d. identify advanced features of publishers' software.	(i) Teacher to demonstrate the advanced features that enhance visual appearance of documents (Books, magazines, newspapers) (ii) Students to do practical on how to use special features of desktop publishing.	• Desktop publishing software • Computer • LCD projector	Is the student able to identify advanced features of publishers' software?	16
4.0 NETWORKING AND DATA COMMUNICATION 4.1 Introduction to networking	By the end of this sub-topic the student should be able to explain different terms used in networking	(i) Teacher to use role play for students to introduce the concept of networking and the parts of network systems (sender, receiver and medium). (ii) Student to explain key terms used in networking.	• Manila sheets • Marker pen • Poster showing networking features.	Is the student able to explain different terms used in networking?	1
4.2 Purpose and limitations of networking	By the end of this sub-topic the student should be able to:-	(i) Students to brainstorm on the component of computer network.	• network cables • network cables connecters • HUB	Is the student able to: -Identify the	

TOPIC/SUB - TOPIC	SPECIFIC OBJECTIVES	TEACHING/LEARNING STRATEGIES	TEACHING/LEARNING RESOURCES	ASSESSMENT	ESTIMATED NUMBER OF PERIOD
	a. Identify the component of computer networks.	(ii) Teacher to explain the components of computer network. (iii) Teacher to demonstrate a simple physical network configuration. (iv) Student in groups to practice on how to configure simple network.	• Modems • Transmitters • Network card • Router • Bridges • Repeaters • Network Interface Card (NIC) • Computers	- Components of computer networks? - Configure simple network?	8
	b. describe purpose and limitations of networking	(i) Teacher to explain the purpose and limitations of networking. (ii) Students in groups to discuss how to identify the purpose and limitations of networking.	• Manila sheet • Marker pen • A4 paper • Pen/pencil	Is the student able to describe the purpose and limitations of networking?	1
	c. Describe the characteristics and relative advantages of networked and stand alone computer.	(i) Through think pair share technique students to describe the advantages over disadvantages of networked environment and stand alone environment. (ii) Students in groups to explain the advantages and disadvantages of networked computer over stand alone computer.	• Manila sheet • Marker pen • Networked computers • Stand alone Computer and its accessories	Is the student able to : - Describe characteristics of a networked environment? - Identify advantages and disadvantages of networked computer and stand alone computer?	2
4.3 Types of computer networks	The student should be able to:- a) Distinguish between LAN, MAN, WAN,	(i) Teacher to guide students to discuss in groups the meaning of the following types of computer networks	• Manila sheets • Marker pen • A4 paper • Pen/pencil	Is the student able to: - Distinguish the meaning of LAN, WAN,	

TOPIC/SUB - TOPIC	SPECIFIC OBJECTIVES	TEACHING/LEARNING STRATEGIES	TEACHING/LEARNING RESOURCES	ASSESSMENT	ESTIMATED NUMBER OF PERIOD
	internet and intranet.	LAN.MAN,WAN, Internet and intranet. (ii) Teacher to assist students to explain the difference and similarities between the types of computer networks.		MAN, Internet and intranet? - Distinguish between LAN, WAN, MAN, Internet and intranet?	3
	b) Compare different types of computer networks	(i) Students to brainstorm and compare different networks in terms of resources, risk factor, data sharing, information access and backup of information. (ii) Teachers to summarize issues from the students related to the difference between types of networks.	• Manila sheets • Marker pen • Poster	Is the student able to compare different types of computer networks?	2
4.4 Network Topologies	By the end of this sub-topic the student should be able to:- a. Distinguish between logical and physical topology.	(i) Teacher to explain the meaning of logical topology. (ii) Student to perform role play to exercise the physical topology. (iii) Teacher to guide students to distinguish logical and physical topology.	• Manila sheets • Marker pen • Posters	Is the student able to differentiate logical topology and physical topology?	1
	b. Describe different networks topologies.	(i) Teachers to lead student to discuss the strength and weakness of a particular topologies (ring, star, mesh, bus) (ii) Students through discussion to summaries the weakness and strength of networks topologies	• Manila sheets • Marker pen • Computer	Is the student able to describe different network topologies?	4

TOPIC/SUB - TOPIC	SPECIFIC OBJECTIVES	TEACHING/LEARNING STRATEGIES	TEACHING/LEARNING RESOURCES	ASSESSMENT	ESTIMATED NUMBER OF PERIOD
4.5 Network Security	By the end of this sub-topic the student should be able to:- a. Recognise the importance of network security.	(i) Students into small groups to discuss and explore the importance of network security. (ii) Teacher to guide the students into discussion on the importance of network security.	• Manila sheet • Marker pen	Is the student able to recognise the importance of network security?	2
	b. Identify the types of threats that can be encountered in computer networks.	(i) Teacher to use question and answers to guide students to explore the threats that are encountered in computer networking. (ii) Students to explain types of threats	• Manila sheet • Marker pen • Poster	Is the student able to: - Identify types of threats? - Explain types of threats	2
	c. Distinguish different ways of protecting information on the network.	(i) Students to brainstorm on different ways of data protection. (ii) Teacher to guide students to differentiate types of data protection.	• Manila sheets • Marker pen • Poster	Is the student able to distinguish different ways of protecting information on the network?	2
5.0 ELEMENTARY PROGRAMMING 5.1 Definition of Programming	By the end of this sub-topic the student should be able to explain the meaning of program and programming.	(i) Teacher to provide focused questions and answers on meaning of computer program and programming. (ii) Students in groups to explain the meaning of program and programming.	• Manila sheets • Marker pen • Posters	Is the student able to explain the meaning of program and programming?	2

TOPIC/SUB - TOPIC	SPECIFIC OBJECTIVES	TEACHING/LEARNING STRATEGIES	TEACHING/LEARNING RESOURCES	ASSESSMENT	ESTIMATED NUMBER OF PERIOD
5.2 Levels of Programming Languages	By the end of this sub-topic the student should be able to:- a. Describe levels of programming languages.	(i) Teacher to guide students to explain different levels of programming language (machine, assembly, procedural, problem – oriented and natural language) (ii) Students to note down the notice about the levels of programming languages in their books.	• Manila sheets • Marker pen • Posters	Is the student able to : - Explain the meaning of programming? - Describe levels of programming languages?	2
	b. Differentiate types of high languages.	(i) Teacher to lead students to discuss the different types of high level language (procedural – oriented, object – oriented) and natural language. (ii) Students in small groups to compare the differences between the high level languages.	• Manila sheets • Marker pen • Posters	Is the student able to differentiate the types of high languages?	4
5.3 Program Development	The student should be able to explain program development cycle.	(i) Teacher to explain with aid of a diagram and charts the program development cycle. (ii) Students to practice on how to draw the program development cycle.	• Manila sheets • Marker pen • Posters	Is the student able to explain program development cycle?	6
5.4 Program Control Structures	The student should be able to:- a. Differentiate types of program control structures.	(i) Teacher to guide students to discuss the program control structures (sequence, controlling and looping). (ii) Students to practice on how to draw the control structure.	• Manila sheets • Marker pen • Posters	Is the student able to differentiate types of programming control structures?	8

FORM VI

Class Competences

By the end of Form VI the student should demonstrate the ability to:-

1. Use appropriate symbols, graphs, diagrams, pictures, video and text to communicate effectively.
2. Analyse, organise and synthesise information from multiple sources and apply logical thinking in processing and classifying information.
3. Apply ICT to develop a desire and an interest for life long learning and personal growth.
4. Identify the impact of ICT on environmental degradation.
5. Apply ICS knowledge and skills to personal and moral development in socio cultural context.
6. Apply multimedia skills in daily activities.

Class Objectives

By the end of Form VI student should be able to:-

1. Appreciate the use of computers in daily life.
2. Understand social and economic implication of computer applications.
3. Apply concepts in networking and data communication.
4. Design and develop functional websites.
5. Develop knowledge and skills to manage databases.
6. Appreciate ICT career opportunities and advancement.
7. Apply ICS knowledge and skills to develop solution, products, processes or services in response to challenges in daily life.

TOPIC/ SUB - TOPIC	SPECIFIC OBJECTIVES	TEACHING/LEARNING STRATEGIES	TEACHING/LEARNING RESOURCES	ASSESSMENT	NUMBER OF PERIOD
1.0 **MULTIMEDIA** 1.1 Introduction to multimedia	By the end of this sub-topic the student should be able to:- a. Explore the concepts of multimedia.	(i) Students in small groups to discuss and present the meaning of interactivity multimedia and new media. (ii) Teacher to lead students to explain the concepts of multimedia.	• Manila sheets • Marker pen • Multimedia software • LCD projector	Is the student able to explain the concepts of multimedia interactivity and new media?	2
	b. Describe six phases of multimedia design.	(i) Teacher to guide students to mention six phases of multi media design. (ii) Teachers to ask students to discuss the phases of multimedia design (define the audience, design and story boarding choose the tools, create the content, multimedia authoring testing) (iii) Students to explore the phases of multimedia design.	• Manila sheets • Marker pen • Multimedia software • Multimedia hardware • LCD projector	Is the student able to describe six phases of multimedia design?	4
1.2 Uses of multimedia	By the end of this sub-topic the student should be able to:- a. Describe uses of multimedia in education, community, development and in business.	(i) Student to brainstorm on the uses of multimedia. (ii) The teacher to lead students in categorising the multimedia uses into education community development and business.	• Manila sheets • Marker pen • Multimedia software • Multimedia hardware • LCD projector	Is the student able to:- - Describe the uses of multimedia? - Categorise the multimedia uses in different areas?	2
	b. Compare advantages and disadvantages of using multimedia.	(i) Students in small groups to discuss advantages and disadvantages of using multimedia before share in pair and then in quadruple.	• Manila sheets • Marker pen • Multimedia software • Multimedia hardware • LCD projector	Is the student able to compare advantages and disadvantages of using multimedia?	1

TOPIC/ SUB - TOPIC	SPECIFIC OBJECTIVES	TEACHING/LEARNING STRATEGIES	TEACHING/LEARNING RESOURCES	ASSESSMENT	NUMBER OF PERIOD
		(ii) Teacher to summarize student's presentations from the quadruples.			
1.3 Multimedia representation	By the of this sub-topic the student should be able to:- a. Explain forms of multimedia representation.	(i) Teacher to lead students to discuss the forms of multimedia representation. (ii) Students in groups to explain the forms of multimedia representation	• Manila sheets • Marker pen • Multimedia software • Multimedia hardware • LCD projector	Is the student able to explain forms of multimedia representation?	2
	b. Differentiate forms of multimedia representation.	(i) Students in groups to discuss the characteristics of different forms of multimedia representations that differentiate them (textual, picture, animation, audio and video). (ii) Teachers to lead students to differentiate the characteristics and forms of multimedia representation.	• Manila sheets • Marker pen • Multimedia software • Multimedia hardware • LCD projector	Is the student able to differentiate the characteristics and forms of multimedia?	2
	c. Explain how to create multimedia.	(i) Teachers to lead students to discuss the phases of multimedia design. (ii) Teacher to demonstrate to students on how to create a simple multimedia using different multimedia tools (PowerPoint, Flash, Adobe Photoshop, etc) (iii) Students in groups to practice on how to creation of multimedia.	• Computer • Multimedia software(PowerPoint, Flash, Adobe Photoshop, etc) • Multimedia hardware • LCD projector	Is the student able to explain how to create multimedia presentation?	6

TOPIC/ SUB - TOPIC	SPECIFIC OBJECTIVES	TEACHING/LEARNING STRATEGIES	TEACHING/LEARNING RESOURCES	ASSESSMENT	NUMBER OF PERIOD
	d. Identify different image/graphic file format.	(i) Students to do library search on the bitmap image and vector graphs. (ii) Students in groups to explain the meaning of bitmapped image and vector graphics. (iii) Teacher to lead students discussion on how to explain different image/graphic file format standards (BMP, PICT, TIFF, JPEG, GIF and PNG).	• Manila sheets • Marker pen • Multimedia software • Multimedia hardware • LCD projector	Is the student able to identify bitmap and vector graphics files?	3
	e. Produce image and graphics.	(i) Teacher to demonstrate on how to create the bitmap image and vector graphics using graphic software (paint programs, photo-manipulation programs, draw programs, 3D-modeling and Animation program). (ii) Students to perform laboratory activities to animate a Bitmap images and vector graphics. (iii) Teachers to guide students to do the lab. activity on bitmap image and vector graphics.	• Computer multimedia software • Multimedia hardware • Manila sheet • Marker pen	Is the student able to produce bitmap and vector graphics images?	6
	f. Animate image and graphics.	(i) Teacher to demonstrate how to animate an Image and graphics using	• Computer multimedia software • Multimedia hardware	Is the student able to animate bitmap and vector graphics?	6

TOPIC/ SUB - TOPIC	SPECIFIC OBJECTIVES	TEACHING/LEARNING STRATEGIES	TEACHING/LEARNING RESOURCES	ASSESSMENT	NUMBER OF PERIOD
		animations program. (ii) Students to perform laboratory activities to animate images and graphics. (iii) Teachers to assess and supervise lab. activities on how to animate image and graphics.			
	g. create audio media	(i) The teacher to demonstrate how to record, digitize and compress audio format using appropriate software (real audio, Camtesia, Nero, etc). (ii) Students to practice on recording, digitizing and compressing audio format using appropriate software. (iii) Teacher to lead students into discussion on how to play back a compressed audio file. (iv) Students to practice on how to play back compressed audio files.	• Speaker projector • Microphone • Multimedia software • Recording software • Manila sheets • Marker pen • LCD projector	Is the student able to:- - Create audio media? - Digitise and compress audio file using appropriate software?	10
	h. Incorporate audio media with animated media.	(i) Teachers to demonstrate on how to incorporate audio media with animated media. (ii) Students to practice on how to incorporate audio media with animated media.	• Speaker projector (LCD) • Microphone • Multimedia software • Recording software • Manila sheets • Marker pen	Is the student able to incorporate audio media with animated media?	4
	i. create video media	(i) Teacher to demonstrate how to record and digitize a moving picture	• Computer • Video camera • Digitizer (for Analogy	Is the student able to:- - Digitise a moving picture using	8

TOPIC/ SUB - TOPIC	SPECIFIC OBJECTIVES	TEACHING/LEARNING STRATEGIES	TEACHING/LEARNING RESOURCES	ASSESSMENT	NUMBER OF PERIOD
		using appropriate hardware and software. (ii) Students to practice on how to record and digitize a moving picture using appropriate hardware and software.	Video Camera) • LCD projector software • Video editing software • Video compressor software	appropriate hardware and software - Record and digitise a moving picture using appropriate hardware and software?	
	j. Edit and compress video media.	(iii) Teachers to demonstrate on how to edit and compress video media into MPGE format. (iv) Students to practice on how to edit and compress video media into MPGE format. (v) Teacher to guide on editing and compress video media in MPGE format.	• Computer • Software • Video editing software • Video compression software • Digitizer (for Analogy video camera) • LCD projector	Is the student able to edit and compress video medium?	10
2.0 DATABASE MANAGEMENT SYSTEMS (DBMS) 2.1 Introduction to Database Management Systems	By the of this sub-topic the student should be able to:- a. Describe the need for, purpose and types of databases.	(i) Teacher to lead students to discuss the meaning of database. (ii) Teacher to ask students to discuss the difference between database and DBMS. (iii) Teacher to lead students to brainstorm the types of databases. (iv) Students to explain the types of database. (v) Teachers to lead student in small groups to discuss the need for database. (vi) Student to explore the need for database.	• Manila paper • Marker pen • LCD projector	Is the student able to describe the need for, purpose and types of database?	2

TOPIC/ SUB - TOPIC	SPECIFIC OBJECTIVES	TEACHING/LEARNING STRATEGIES	TEACHING/LEARNING RESOURCES	ASSESSMENT	NUMBER OF PERIOD
	b. Explain the need for nature and purpose of DBMS.	(i) Teachers to lead students to discuss the nature of database management systems. (ii) Students use summary of discussion to explain the nature and purpose of database management system and the difference between database and DBMS.	• Manila paper • Marker pen • LCD projector	Is the student able to explain the need for, nature and purpose of database management system?	6
2.2 Data Types	By the end of this sub-topic the student should be able to:- a. Recognise different types of data used in DBMS.	(i) Teacher to assist students to discuss the different types of data used in DBMS. (ii) Students to identify different types of data used in DBMS.	• Marker pen • Manila sheets • LCD project	Is the student able to:- -Recognise different types of data used in DBMS - Identify the data used in DBMS?	2
	b. Distinguish different data types used in DBMS.	(i) Teachers to lead students through discussion on how different data types used in DBMS (ii) Students to relate the data types with a particular DBMS.	• Marker pen • Manila sheets • LCD Projector	Is the student able to distinguish the data used in DBMS?	2
2.3 Database Design	By the end of this sub-topic the student should be able to:- a. Analyse the information cycle.	(i) Teacher to discuss with student on the information flow life cycle in a system. (ii) Students in small groups to describe the information flow life cycle in a DBMS.	• Marker pen • Manila sheets	Is the student able to analyse the information life cycle?	2

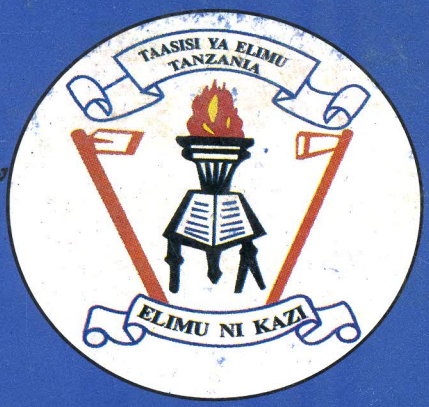
TOPIC/ SUB - TOPIC	SPECIFIC OBJECTIVES	TEACHING/LEARNING STRATEGIES	TEACHING/LEARNING RESOURCES	ASSESSMENT	NUMBER OF PERIOD
	b. Apply step-by-step procedure to develop a database.	(i) Teacher to demonstrate step-by-step on how to develop a database using DBMS software. (ii) Student to develop a class database using DBMS software.	• Computer • DBMS software • LCD projector • Marker pen • Manila sheets	Is the student able to design a Database management system?	8
	c. To explain Entity Relationship Modelling.	(i) Teacher to explain the concept of entity, relationship, and E-R diagrams. (ii) Students to explore E-R diagrams.	• Manila sheet • Marker pen • A4 paper • Pen/pencil • LCD projector	Is the student able to: - Explain E-R concept? - Draw the E-R diagrams ?	4
	d. To explain the concept of cardinality of relationship.	(i) Teacher to explain the concept of cardinality of relationship. (ii) Students to explore the concept of cardinality.	• Computer • DBMS software • LCD projector • Marker pen • Manila sheets	Is the student able to explain the concept of cardinality?	4
	e. Identify three forms of normalization.	(i) Teacher to use the developed database above to discuss with student on normal forms. (ii) Students to explain the three types of data normalization. (iii) Teacher to demonstrate on how to normalize data. (iv) Students in small groups to perform experiment on data normalization.	• Computer • DBMS software • LCD projector • Manila paper • Manila sheet	Is the student able to identify three forms of normalization?	4
3.0 ICT CAREER OPPORTUNITIES 3.1 Introduction	By the end of this sub-topic the student should be able to:- Explore the meaning of career.	(i) Teacher to lead students to explore the meaning of career. (ii) Students in groups to explain the meaning of career.	• Manila sheet • Marker pen • Poster • LCD projector	Is the student able to explain the meaning of career?	4

TOPIC/ SUB - TOPIC	SPECIFIC OBJECTIVES	TEACHING/LEARNING STRATEGIES	TEACHING/LEARNING RESOURCES	ASSESSMENT	NUMBER OF PERIOD
3.2 Descriptions of career in the field of ICT	By the end of this sub-topic the student should be able to:- a. Identify ICT related opportunities.	(i) Students in groups to brainstorm on how information and communication technology industry is organised and the possible career opportunity existing. (ii) Teacher to lead students to discuss different career opportunities of ICT in different categories (Education, health, entertainment, sports, engineering, business, agriculture etc).	• Manila sheet • Marker pen • Poster • LCD projectors	Is the student able to identify and describe ICT related opportunities?	4
3.3 Opportunities for further education	By the end of this sub-topic the student should be able to:- a. Explore ICT advancement opportunities in universities, polytechnics and other higher learning institutions.	(i) Teachers to lead students to discuss on ICT advancement opportunity for tertiary and any other higher level of education. (ii) Students to identify the possible advancement opportunities at university, polytechnics and other learning institution through library tour.	• Library • Manila sheet • Marker pen • A4 paper • Computer connected to Internet • LCD projector	Is the student able to list and explain areas of ICT advancement for tertiary and higher education?	4
4.0 WEBSITE DEVELOPMENT 4.1 Introduction to website	By the end of this sub-topic the student should be able to:- a. Describe the meaning of website.	(i) Teacher to lead students to discuss the meaning of website. (ii) Students in groups to describe the meaning of website.	• Manila sheet • Marker pen • Computer with Internet connection • Chart showing the structure/feature of website. • LCD Projector	Is the student able to -describe the meaning of website? - describe the features of a website?	1

TOPIC/ SUB - TOPIC	SPECIFIC OBJECTIVES	TEACHING/LEARNING STRATEGIES	TEACHING/LEARNING RESOURCES	ASSESSMENT	NUMBER OF PERIOD
	b. identify types of websites	(iii) Students in groups to brainstorm the different types of website. (iv) Teacher to summarize by highlighting the different types of websites (Commercial, educational, governments, payments etc). (v) Teacher to guide students to discuss the types and functions of website. (vi) Students in groups to identify and differentiate the functions of different types of website.	• Manila sheet • Marker pen • Computer with Internet connection • Poster showing the types of websites and their function • LCD Projector	Is the student able to identify types of website?	2
4.2 Planning a Website	By the end of this sub-topic the student should be able to:- a. Explain the meaning of website planning.	(i) Teacher to lead students to discuss how to plan a website (include development tools, website terminologies) (ii) Students in groups to summarize the essential elements in planning a website.	• Poster with hierarchical representations of a website • Manila sheet • Marker pen • LCD Projector • Computer connected to internet.	Is the student able to explain on how to plan website include development tools and to describe website terminologies.	2
	b. describes the purpose of a website planning.	(i) Teacher to guide students to discuss the purpose of website planning (consider goals, identification of needs, types of audience, technology to be used and others) (ii) Students in groups to	• Manila sheet • Marker pen • LCD Projector • Computer connected to internet.pen	Is the student able to describe the purpose of planning website?	2

TOPIC/ SUB - TOPIC	SPECIFIC OBJECTIVES	TEACHING/LEARNING STRATEGIES	TEACHING/LEARNING RESOURCES	ASSESSMENT	NUMBER OF PERIOD
		summarize the discussion by identifying needs, audiences, technology to be used and goals. (iii) The teacher to assign students in groups to plan a simple school website. Assist them wherever they need help.			
4.3 Designing website step-by-step	By the end of this sub-topic the student should be able to:- a. Identify steps in designing a website.	(i) Lead students to discuss steps in designing a website to include types of website contents of the website, website design layout, media to be used, contact with the end users and others.	• Manila sheet • Marker pen • LCD Projector • Computer connected to internet.	Is the student able to follow steps in designing a website?	2
	b. Develop a website.	(i) Teacher to demonstrate on how to create a simple website. (ii) Students to design and Create a simple websites (e.g. school website)	• Manila sheet • Marker pen • Web development tools	Is the student able to develop a website?	16
5.0 PROJECT 5.1 Introduction of the project	By the of this sub-topic the student should be able to:- a. Define the term project.	(i) Students to brainstorm on the meaning and purpose of the term "project". (ii) Teacher to lead student to discuss the term project.	• Manila sheet • Marker pen	Is the student able to define a "project"?	2

TOPIC/ SUB - TOPIC	SPECIFIC OBJECTIVES	TEACHING/LEARNING STRATEGIES	TEACHING/LEARNING RESOURCES	ASSESSMENT	NUMBER OF PERIOD
	b. Explain the concept of project management	(i) Teacher to lead students to discuss the elements of project management (time schedule, cost, etc). (ii) Student in small groups to explore the element of project management.	• Manila sheet • Marker pen • A4 paper • Pen/pencil • LCD projector • Project management tools	Is the student able to explain elements of project management?	
	c. Explain elements of the projects.	(i) Teacher to guide students to discuss elements of the project that will include problem, identification, fact finding, system design, development, testing documentation and report writing. (ii) Students to explain the elements of the project. (iii) Students in groups to identify problems within the school or the community. (iv) Teacher to guide students to define the problems identified by students. (v) Teacher to assist students in fact finding, system design, development, testing and documentation. (vi) Students to work on a given project. (v) Teacher to evaluate the project.	• Manila sheet • Marker pen • Computer system • Computer software • External storage devices • Stationeries • Relevant references	Is the student able to identify elements of the project? Is the student able to produce a quality project product?	20



Printed by: Business Printers Ltd, 16 Lugoda Street Gerezani Industrial Area.
P.O. Box 78495, Dar es salaam, Tel: (22) 2134060/2134062