

REPUBLIC OF KENYA

Technical, Industrial, Vocational and Entrepreneurs]!ip Training

CRAFT CERTIFICATE IN INFORMATION TECHNOLOGY

SYLLABUS AND REGULATIONS



KENYA INSTITUTE OF EDUCATION
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This syllabus is expected to respond to the demands of industries, scientific research and educational institutions in supporting the work of professionals in computing. It has been modelled to satisfy the strategies of Kenya Vision 2030 and designed on a modular platform to provide flexibility to trainers and trainees.

The Kenya Institute of Education takes this opportunity to sincerely thank the Ministry of Higher Education, Science and Technology, members of the Academic committee, Course Panel members, Subject specialists and all stakeholders who contributed towards the development of this syllabus.

**L. N. Nzomo, OGW (Mrs) Director
Kenya Institute of Education**

FOREWORD

Technical, Industrial, Vocational, and Entrepreneurship Training (TIVET) programs have been revised to cater for new technology, issues and trends that have emerged since early '90s when the syllabi were developed under the Technical Education Project (TEP) program. The content has been revised and new areas included to help the graduates of the program acquire knowledge, practical skills, skills, attitudes and competence relating to occupations in various sectors of economic and social life.

The syllabus is designed and organized to guide the trainer in the depth of teaching with a clear outline of the general objectives, specific objectives, teaching/learning activities and suggested methods of evaluating the trainee's achievement. The curriculum is modular and competency based allowing for trainees' exit to the world of work and easy re-entry to the course.

I am grateful to the staff, subject and course panel members and the Academic Committee of the Kenya Institute of Education, the staff of the Ministry of Higher Education Science and Technology and all those who participated in the development and production of this syllabus.

Mr. Owate Wambayi
Director, Technical Education
Ministry of Higher Education, Science and Technology

1.1 GENERAL INTRODUCTION

The overall education policy goal of the Government of Kenya is to achieve the Millennium Development Goals (MDGs) and Education for All (EFA) goals by 2015 in tandem with the national and international commitments. The Vision of the Ministry of Education is "to have a globally competitive education, training and research for Kenya's sustainable development", while the Mission is "to provide, promote coordinate the provision of quality education, training and research for the empowerment of individuals to become responsible and competent citizens who value education as a lifelong process'", as envisaged by Kenya Vision 2030.

1.2 NATIONAL GOALS OF EDUCATION IN KENYA

These national goals of education are given below:

i) **Foster nationalism, patriotism and promote national unity**
 Kenya's people belong to different ethnic groups, races and religions, but these differences need not divide them. They must be able to live and interact as Kenyans. It is a paramount duty of education to help the youth acquire this sense of nationhood, by removing conflicts and by promoting positive attitudes of mutual respect, which enable them to live together in harmony, and foster patriotism in order to make a positive contribution to the life of the Nation.

ii) **Promote the social, economic, technological and industrial**
 Deeds for national development Education should prepare the youth of the country to play an effective and productive role in the life of the nation.

- **Social Needs.**

Education in Kenya must prepare children for changes in attitudes and relationships, which are necessary for the smooth process of a rapidly developing modern economy. There is bound to be a silent social revolution in the wake of rapid modernisation. Education should assist our youth to smoothly adapt to this change.

- **Economic Needs**

Education in Kenya should produce citizens with skills, knowledge, expertise and personal qualities that are required to support a growing economy. Kenya is building a modern and independent economy, which is in need of adequate domestic manpower.

- **Technological and Industrial Needs**

Education in Kenya should provide the learners with the necessary skills and attitudes for Industrial development Kenya recognises the rapid industrial and technological changes taking place, especially in the developed world. We can only be part of this development if our education system deliberately focuses on knowledge, skills and attitudes that will prepare the youth for these changing global trends.

(iii) **Promote individual development and self-fulfilment**

Education should provide opportunities for the fullest development of individual talents and personality. It should help children to develop their potential, interests and abilities. A vital aspect of individual development is character building.

(iv) Promote sound moral and religious values

Education should provide for the development of knowledge, skills and attitudes that will enhance acquisition of sound moral values and help children to grow up into self-disciplined, self-reliant and integrated citizens.

(v) Promote social equality and responsibility

Education should promote social equality and foster a sense of social responsibility within an education system, which provides equal education opportunities for all. It should give all children varied and challenging opportunities for collective activities and corporate social service, irrespective of gender, ability or geographical environment.

(vi) Promote respect for and development of Kenya's rich and varied cultures

Education should instill in the youth of Kenya an understanding of -past and present cultures and their valid places in contemporary society. The children should be able to blend the best of traditional values with the changed requirements that must follow rapid development in order to build a stable and modern society.

(vii) Promote international consciousness and foster positive attitudes towards other nations

Kenya is part of the international community. It is part of the complicated and interdependent network of peoples and nations. Education should, therefore, lead the youth of the country to rights and benefits that this membership entails accept membership of this international community with all the obligations and responsibilities,

(viii) Promote positive attitudes towards good health and environmental protection

Education should inculcate in the youth the value for good health in order to avoid indulging in activities that will lead to physical or mental ill health. It should foster positive attitudes towards environmental development and conservation. It should lead the youth to appreciate the need for a healthy environment.

1.3 NATIONAL AIMS OF TECHNICAL TRAINING PROGRAMMES

The aims of the technical training at both post primary and post-secondary levels should be to:

- a) provide training opportunities for the increasing number of school leavers to enable them to be self-supporting
- b) develop practical skills and attitudes which will lead to income generating activities in the urban and rural areas through self-employment
- c) provide practical education and training skills which are responsive and relevant to Kenya's agricultural, industrial, commercial and economic

- needs
- d) provide the technical knowledge and vocational skills necessary to enhance the pace of this nation's development
 - e) encourage self-employment while at the same time producing skilled artisans, technicians and technologists for both formal and informal sectors at the ratio of one technologist to five technicians to 30 craftsmen/artisans (1:5:30).

1.4 OBJECTIVES OF THE TECHNICAL TRAINING PROGRAMMES

The general objectives of the technical training programs are to:

- a) develop skills which will be responsive and relevant to the country's human resources required at the middle level.
- b) prepare the trainees so that they can enter-the world of work with confidence for either salaried employment or self-employment.
- c) impart adequate skills which will enable the trainee to perform middle level supervisory functions

2.0 INTRODUCTION TO THE COURSE

This course is intended to equip the trainee with knowledge, skills and attitudes which are responsive to the challenging needs in the computing industry. The course will allow the graduate to work in a salaried employment or self-employment. To achieve this, units such as Entrepreneurship, Communication Skills and Life Skills have been included.

During the course the trainee shall be exposed to the following core areas:

- a) Computer maintenance and user support
- b) programming
- c) Computer Applications
- d) Operating systems

2.1 COURSE DESCRIPTION

The Craft Certificate in Information technology is packaged in two modules namely:

- Module 1 (Computer Operations)
- Module II (ICT Assistant)

At the end of each sub-module unit, a list of suggested teaching/learning resources, activities, as well as evaluation methods have been included. The list is however not exhaustive and the trainer is encouraged to use other resources as shall be deemed appropriate.

2.2 GENERAL OBJECTIVES OF THE COURSE

By the end of the course, the trainee should be able to:

- a) install computer hardware and software
- b) maintain computer hardware and software
- c) use programming skills to provide solutions to existing problems
- d) assemble and disassemble computers
- e) troubleshoot a range of PCs and associated peripherals
- f) appreciate the role of sustaining the environment in electronic waste management
- g) supervise effectively the computing environment in the work place

- h) acquire knowledge, skills and attitudes necessary for self or formal employment
- i) proceed for further training in the trade area

2.3 GENERAL REGULATIONS

2.3.1 APPROVAL OF THE TRAINING INSTITUTIONS:

Institutions offering this course should be recognized and approved by the Ministry responsible for training.

2.3.2 DURATION OF THE COURSE

The course is designed to have 1980 hours. Out of these, 1650 hours will be spent in the institution while 330 hours will be used for industrial attachment. The course will be offered in modular form where Module I is a prerequisite for Module II. Industrial attachment will be after Module I.

The course duration will be spent as follows

	Institution Time (Hours)	Industrial Attachment	Total Time (Hours)
Module 1	968	330	1298
Module II	682	-	682
TOTAL	1650	330	1980

2.3.3 ENTRY REQUIREMENTS

The minimum entry requirements will be:

- a) A pass in Kenya Certificate of Secondary Education (KCSE) with an average grade of D+ (plus)
- b) Equivalent qualifications as determined by Kenya National Examination Council (KNEC).

2.3.4 EXAMINABLE UNITSMODULE I

1. Communication Skills
2. Life Skills
3. Entrepreneurship
4. Introduction to ICT
5. Computer Applications I
6. Mathematics
7. Operating Systems
8. Basic Electronics

Module D

1. Structured Programming
2. Computer Maintenance and Support
3. Computer Applications II
4. Business Plan
5. Introduction to Research Methods
6. Trade Project

2.4 ATTENDANCE AND COURSEWORK REQUIREMENT

The candidates are expected to attend an institution approved for the course for the theoretical and practical studies.

2.4.1 COURSEWORK MARKS

Continuous assessment marks for course work must be kept by the institution and details must be submitted to the Kenya National Examinations Council in respect of each candidate entered for the examinations at least two weeks before external examinations are taken.

2.4.2 COURSEWORK ASSESSMENT

Continuous assessment will be given a weighting of 30% and the external examinations by the Kenya National Examinations Council a weighting of 70% in the determination of the final grade.

2.4.3 INDUSTRIAL ATTACHMENT

Before the end of the course, the trainee must show evidence of having covered a minimum of 330 hours on Industrial Attachment. During this period, each trainee will be attached to an organisation practising the relevant trade where he/she will be expected to familiarise himself/herself with all or most aspects of the trade. The training institutions in collaboration with the organisations where trainees are attached, should supervise the trainee during the Industrial Attachment.

2.4.4 PROJECT WORK

A project in this context means a research carried out by an individual trainee. It may be practical, mathematical, evaluative, and descriptive or research based project. The project must have well defined objectives so that the trainee has something definite to aim at, without inhibiting his/her initiative.

2.4.5 AIMS OF PROJECT WORK

The aims of project work are to give the trainee:

- a) an opportunity to develop and implement their own ideas
- b) experience of working with a supervisor and peers in carrying out research
- c) experience in carrying out research and writing a technical report

2.4.6 PROJECT SELECTION

The trainee will carry out projects, one of which will be related to the trade and will be assessed by the Kenya National Examinations Council, while the other one will be an entrepreneurship project, which will be submitted to the Kenya National Examinations Council for validation

The Business Plan and the Trade Project will be carried out at the end of Module II. The project may be decided upon by the institution or sponsors. The list of the projects should be submitted to the Kenya National Examinations Council by the beginning of Module II.

2.4.7 PROJECT SUPERVISION

Each project must be supervised by a course tutor to ensure that the candidate is receiving adequate guidance. A minimum of 50 hours should be spent on orientation to project methodology.

2.4.8 PROJECT SUBMISSION

Projects will be submitted to the Kenya National Examinations Council at least

two weeks before the beginning of the Module II examinations.

2.4.9 PROJECT ASSESSMENT

Assessment of the project work should be carried out by the internal examiner from the training institution and an external examiner from the Kenya National Examinations Council.

2.5 ISSUE OF EXAMINATION RESULTS

For the award of a certificate, every candidate must be assessed through Continuous Assessment, Theoretical and Practical tests. Results of the examination as a whole will be issued in five classes for the individual papers and will be in eight grades. Each candidate will receive all records of performance, giving the result in terms of class and grade.

The relationship between classes and grades is:

Pass with distinction	Grade 1 and 2
Pass with credit	Grade 3 and 4
Pass	Grade 5 and 6
Referred	Grade 7
Fail	Grade 8

Candidates who fail any paper in a particular module will be **REFERRED** in the failed paper and will be allowed to re-sit up to a maximum of three (3) times and pass within a period of five (5) years from the date of the first sitting. Thereafter the candidate will be discontinued from further re-sitting the paper(s).

A candidate whose overall result is **FAIL** is required to repeat the whole module before proceeding to the next.

2.5.1 AWARD OF CERTIFICATE

The Kenya National Examinations Council will issue the candidates with result slips for all Modules. After successful completion of the two modules, a candidate will be eligible to be awarded a Craft Certificate in Information Technology by the Kenya National Examinations Council.

2.5.2 GENERAL EXAMINATION REGULATION

In the event of any inconsistency arising between the regulations as set out in this syllabus and the general Regulations published by the Kenya National Examinations Council, the General Regulations of the Council shall prevail.

2.6 COURSE CODING AND TIME ALLOCATION

MODULE I

Code	Module Units	Sub-Module Units	Time
		<ul style="list-style-type: none"> – Introduction to communication – Communication process – Classification of communication 	66

Code	Module Units	Sub-Module Units	Time
		<ul style="list-style-type: none"> – Forms of communication – Channels of communication – Office etiquette, protocol and diplomacy – Writing skills – Summary – Report writing skills – Conducting meetings and minute writing – Interviews – Public relations and customer care – Emerging issues and trends in communication 	
4.1.0	Life Skills	<ul style="list-style-type: none"> – Introduction to life skills – Knowing and living with oneself: – self awareness – Self esteem – Stress management – Coping with emotion – Empathy – Assertiveness – Negotiation – Non-violent conflict resolution – Effective decision making – Critical thinking – Creative thinking – Problem solving – Leisure – Time management – Gender education – Drug and substance abuse – HIV and AIDS – Child labour – Child rights – Relationships 	66
5.1.0	Entrepreneurship	<ul style="list-style-type: none"> – Introduction to entrepreneurship – Evolution of entrepreneurship – The entrepreneur – Creativity and innovation – Entrepreneurial culture – Entrepreneurial opportunities – Entrepreneurial motivation – Entrepreneurial competences 	66

Code	Module Units	Sub-Module Units	Time
		<ul style="list-style-type: none"> – Starting a small business – Business enterprise management – Financial management – Marketing – Enterprise social responsibility and – Business Ethics – Business plan – Information Communication – Technology – Emerging issues and Trends in Entrepreneurship 	
6.1.0	Introduction ICT	<ul style="list-style-type: none"> – Computer fundamentals – Computer hardware – Computer safety and ergonomics – Introduction to computer networking – Data Processing – Impact of ICT in the society – Ethics and professional issues – Emerging trends In ICT – Introduction to computer application – Introduction to operating systems – environment – Word-processing 	154
7.1.0	Computer Applications I	<ul style="list-style-type: none"> – Introduction to computer application – Introduction to operating systems – environment – Word-processing – Database – Presentation software – Internet and e-mail – Emerging trends in computer Application 	198
8.1.0	Mathematics	<ul style="list-style-type: none"> – Number systems, coding and computational arithmetic – Algebra, functions and graphs – Set theory – Matrices – Statistics – Elements of probability 	132

Code	Module Units	Sub-Module Units	Time
		<ul style="list-style-type: none"> – Emerging trends in mathematics 	
9.1.0	Operating Systems	<ul style="list-style-type: none"> – Fundamentals of operating systems – Process management – Memory management – Device I/O management – File management – Emerging trends in operating systems 	143
10.1.0	Basic Electronics	<ul style="list-style-type: none"> – Introduction to electrical circuits – Simple a.c circuits – Simple d.c circuits – Electronic components – Semi-conductor theory – Memories – Number systems – Binary codes – Logic gates and Boolean algebra – Emerging trends in basic electronics 	143
11.1.0	– Industrial Attachment		330
Total time for Module I			1298

Module II

Code	Module Units	Sub-Module Units	Time
12.2.0	Structured Programming	<ul style="list-style-type: none"> – Programming concepts – Programming approaches – Program development – Program design – Programming using C language – C Programming fundamentals – Pointers and data structures – Sorting and searching – Files – Program documentation – Emerging trends in structural programming 	198
13.2.0	Computer Maintenance and Support	<ul style="list-style-type: none"> – Introduction to computer maintenance – Computer input and output devices – Motherboards and buses – Processor 	188

Code	Module Units	Sub-Module Units	Time
		<ul style="list-style-type: none"> – Memory – Storage – Power supply – Computer assembly and disassembly – Software installation – Troubleshooting – Computer user support – Electronic Waste Management – Local Area Networks – Emerging trends in maintenance and support 	
14.2.0	Computer Applications II	<ul style="list-style-type: none"> – Desktop publishing – Accounting packages – Computer Aided Design (CAD) – Emerging trends in computer application 	152
15.2.0	Business Plan	<ul style="list-style-type: none"> – Introduction to Business Planning – Business description – Marketing plan Organization and Management Plan – Operational Production Plan – financial plan – Presentation – Emerging trends 	46
16.2.0	Research Methodology	<ul style="list-style-type: none"> – Introduction to research methods – Research process – Statement of the problem – Literature review – Research design – Sampling – Sources and collection of data – Research proposal – Presentation, analysis and interpretation of data – Report writing – Summary of findings, conclusions and recommendations – Emerging issues and trends in research methods 	50
17.2.0	Trade Project	<ul style="list-style-type: none"> – Introduction to research project work – Research project proposal – Methodologies 	50

Code	Module Units	Sub-Module Units	Time
		<ul style="list-style-type: none"> – Data collection – Presentation, analysis and interpretation – Report writing – Emerging issues and trends 	
Total time for Module II			684

MODULE I: COMPUTER OPERATION

Introduction

This module is intended to equip the trainee with knowledge, skills and attitudes that will enable him/her to operate a computer system. The trainee will be competent to perform as a computer operator and other related positions.

General Objectives

By the end of this module, the trainee should be able to:

- a) communicate effectively
- b) adapt to the social environment through life skills
- c) acquire entrepreneurial skills to generate work for self employment
- d) demonstrate sound technical competencies in computer operation and applications to solve given problems
- e) use mathematical skills for operational decision making
- f) appreciate the principles of operating systems
- g) appreciate electronics concepts

Code	Module units	Time (Hrs)
3.1.0	Communication Skills	66
4.1.0	Life Skills	66
5.1.0	Entrepreneurship	66
6.1.0	Introduction to ICT	163
7.1.0	Computer Application I	198
8.1.0	Mathematics	132
9.1.0	Operating Systems	143
10.1.0	Basic Electronics	143
11.1.0	Industrial Attachment	330
Total time for Module I		1298

3.1.0 COMMUNICATION SKILLS

3.1.1 Introduction

This module unit is intended to equip the trainee with knowledge, skills and attitudes to enable him/her to perform duties, process information from a variety of sources and apply communication skills at the work place

3.1.2 General Objectives

By the end of the module unit, the trainee should be able to:

- a) appreciate the importance of communication in the work place
- b) develop necessary skills for effective communication
- c) appreciate the use of different modes and forms of communication
- d) appreciate the role of information and communication technology in communication
- e) develop the necessary writing skills for various documents
- f) appreciate official etiquette, protocol and diplomacy at the work place
- g) appreciate emerging issues in communication

3.1.3 Module Unit Summary and Time Allocation

Code	Sub-module Unit	Content	Total (Hrs)		
			Theory	Practice	Total
3.1.01	Introduction to communication	Terms and concept used Essentials to effective communication Role of ICT in communication	4	-	4
3.1.02	Communication process	Stages of communication process Barriers to effective communication Ways of overcoming barriers Basic concepts of transmission and receipt of a message Feedback mechanism Ethical issues in communication	1	1	2

Code	Sub-module Unit	Content	Total (Hrs)		
			Theory	Practice	Total
3.1.03	Classification of communication	Types of communication Use of various types of communication	2	2	4
3.1.04	Forms of communication	Forms of communication Advantages and disadvantages of different forms of communication	2	2	4
3.1.05	Channels of communication	Communication channels Advantages and disadvantages of the various communication channels	3	2	5
3.1.06	Official etiquette, protocol and diplomacy	Meaning of etiquette, protocol and diplomacy	3	2	5
3.1.07	Writing skills	Punctuation marks Courtesy in writing Paragraph development Essay writing Functional writing	4	6	10
3.1.08	Summary	Importance of summary writing Essential steps in summary writing	2	2	4
3.1.09	Report writing skills	Definition of a report Role of reports Types of reports Formats of reports Preparation for report writing Report writing , editing and dissemination Referencing styles Preparation of power point slides	4	4	8
3.1.10	Conducting meetings and	Definition of terms Role of meetings and	4	4	8

Code	Sub-module Unit	Content	Total (Hrs)		
			Theory	Practice	Total
	minute writing	minutes Types of meetings Planning and conducting meetings Minute writing Challenges in conducting meetings Advantages and disadvantages of meetings			
3.1.11	Interviews	Meaning of the term interview Purpose of interviews Types of interviews Preparation for an interview Interviewing skills	2	2	4
3.1.12	Public Relations and customer care	Definition of term Types of customers Role of public relations and customer care Interpersonal and public relation skills Quality management Customer care skills Challenges faces in public relation and customer care	2	2	4
3.1.13	Emerging issues in communication	Emerging trends and issues in communication Challenges posed by emerging issues and trends Ways of coping with emerging issues and trends	2	2	4
Total			35	31	66

	3.1.01	INTRODUCTION TO COMMUNICATION	
		Theory	
3.1.01T0	<i>Specific Objectives</i>		a) use terms and concepts in communication effectively
	By the end of the sub-module unit, the trainee should be able to:		b) apply essentials of communication in a given situation
	a) define terms and concepts used in communication	3.1.01P1	<i>Content</i>
	b) explain the purpose of communication	3.1.01P2	Effective use of terms and concepts in communication
	c) explain the essential steps to effective communication		Application of essentials of communication
	d) explain the role of Information and Communication Technology (I.C.T.) in communication	3.1.02	COMMUNICATION PROCESS
3.1.01C	Competence		Theory
	The trainee should have the ability to use the terms and concepts in communication effectively in different situations	3.1.02T0	<i>Specific Objectives</i>
	<i>Content</i>		By the end of the sub-module unit, the trainee should be able to:
3.1.01F1	Terms and concepts used in communication		a) describe the stages of the communication process
3.1.01T2	Purpose of communication		b) identify barriers to effective communication
3.1.01T3	Essentials to effective communication		c) explain ways of overcoming barriers to effective communication
3.1.01T4	Role of ICT in communication		d) identify basic concepts of transmission and receipt of a message
	Practice		e) describe feedback mechanism
3.1.01P0	<i>Specific Objectives</i>		f) explain ethical issues in communication
	By the end of the sub-module unit, the trainee should be able to:	3.1.02C	Competence
			The trainee should have the ability to:

		Practice
	3.1.02P0	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) apply the communication process in a given situation b) encode and decode messages c) demonstrate ethical issues in communication
		<i>Content</i>
3.1.02T1	Stages of communication process	3.1.02P1 Application of the process of communication
3.1.02T2	Barriers to effective communication i) age difference ii) social economic factors iii) language iv) competition for attention v) noise vi) environment vii) attitude of sender/receiver and others	3.1.02P2 Encoding and decoding messages
3.1.02T3	Ways of overcoming barriers to effective communication	3.1.02P3 Demonstration of ethical issues in communication
3.1.02T4	Basic concepts of transmission and receipt of a message i) encoding of message by the sender ii) transmission of message through a channel iii) decoding a message by receiver iv) decoding of feedback by the sender	3.1.03 CLASSIFICATION OF COMMUNICATION Theory
3.1.02T5	Feedback mechanism	3.1.03T0 <i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) explain the various types of communication b) explain the use of various types of communication
3.1.02T6	Ethical issues in communication	3.1.03C Competence The trainee should have the ability to apply the various types of communication in a given situation

	<i>Content</i>	forms of communication effectively	
3.1.03T1	Types of communication i) formal ii) informal iii) internal iv) external v) inter personal vi) intra-personal	3.1.4T1	<i>Content</i> Forms of communication i) oral ii) written iii) visual iv) audio-visual
3.1.03T2	Use of various types of communication	3.1.4T2	Advantages and disadvantages of each form of communication
	Practice		Practice
3.1.03P0	<i>Specific Objective</i> By the end of the sub-module unit, the trainee should be able to apply the various types of communication in given situations	3.1.04P0	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to use the various forms of communication.
3.1.03P1	<i>Content</i> Application of various types of communication	3.1.04P1	<i>Content</i> Using various forms of communication
3.1.04	FORMS OF COMMUNICATION	3.1.05	CHANNELS OF COMMUNICATION
	Theory		Theory
3.1.4T0	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) explain the various forms of communication b) discuss the advantages and disadvantages of each form of communication	3.1.05T0	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) outline the various channels of communication in an organization b) discuss the advantages and disadvantages of each channel of communication
3.1.04C	Competence The trainee should have the ability to use various		

3.1.05C	Competence	The trainee should have the ability to apply various channels of communication in a given situation	<ul style="list-style-type: none"> b) explain the importance of official etiquette c) explain the accepted protocol and diplomacy
	<i>Content</i>		
3.1.05T1	Channels of communication	<ul style="list-style-type: none"> i) vertical ii) upwards iii) downwards iv) lateral/horizontal v) diagonal 	Competence The trainee should have the ability to: <ul style="list-style-type: none"> i) interact with others without offending ii) observe protocol requirements iii) exercise diplomacy in daily interactions iv) adhere to official etiquette requirements
3.1.05T2	Advantages and disadvantages of each channel of communication		
	Practice		
3.1.05P0	<i>Specific Objectives</i>	By the end of the sub-module, the trainee should be able to role play the use of different channels of communication	Content Meaning of etiquette, protocol and diplomacy Practice Official etiquette Accepted protocol and diplomacy
	<i>Content</i>		
3.1.05P1	Role play of use of different channels of communication		
3.1.06	OFFICIAL ETIQUETTE, PROTOCOL AND DIPLOMACY		
	Theory		
3.1.06T0	<i>Specific Objectives</i>	By the end of the sub-module unit, the trainee should be able to: <ul style="list-style-type: none"> a) explain the meaning of etiquette, protocol and diplomacy 	Content Demonstration of accepted official etiquette Theory Specific Objectives By the end of the sub-module unit, the trainee should be able to:
3.1.07	WRITING SKILLS		
	Theory		
3.1.7T0	<i>Specific Objectives</i>	By the end of the sub-module unit, the trainee should be able to:	

- a) determine how to use punctuation marks in a written document
- b) explain the importance of courtesy in writing
- c) develop well constructed paragraphs
- d) explain how to write different types of essays
- e) determine how to write different functional writing

Practice

3.1.07P0 Specific objectives

By the end of the sub-module unit, the trainee should be able to:

- a) use correct punctuation
- b) apply courtesy in writing
- c) essay writing essays
- d) write different types of functional writing

3.1.07C Competence

The trainee should have the ability to:

- i) punctuate correctly
- ii) prepare business documents

Content

- 3.1.07P1 Punctuation marks
- 3.1.07P2 Courtesy in writing
- 3.1.07P3 Essays writing
- 3.1.07P4 Functional writing

Content

- 3.1.07T1 Punctuation marks
- 3.1.07T2 Courtesy in writing
 - i) use of polite language
 - ii) choice of words
 - iii) right expressions
- 3.1.07T3 Paragraph development
 - i) topic sentence
 - ii) support details
- 3.1.07T4 Essay writing
 - i) descriptive
 - ii) explanatory
 - iii) narrative
 - iv) argumentative
- 3.1.07T5 Functional writing
 - i) business letters
 - ii) memorandum
 - iii) notices
 - iv) agenda
 - v) minutes
 - vi) advertisements
 - vii) e-mail
 - viii) facsimile messages
 - ix) press release

3.1.08 SUMMARY

Theory

3.1.08T0 Specific Objectives

By the end of the Sub-module unit, the trainee should be able to:

- a) explain the importance of summarising passages/information
- b) determine the steps in note taking when summarising passages, reports and conversations

3.1.08C Competence

The trainee should have the ability to summarize passages, reports and conversations

- Content**
- 3.1.08T1 Importance of summary writing
 - 3.1.08T2 Essential steps in summary writing

Practice

- 3.1.08P0 *Specific Objectives*
By the end of the sub-module unit, the trainee should be able to take notes and summarize passages, reports and conversations

Content

- 3.1.08P1 Taking notes and summarizing passages
- 3.1.08P2 Summarize passages, reports and conversations

3.1.09 REPORT WRITING SKILLS

Theory

- 3.1.09T0 *Specific Objectives*
By the end of the sub-module unit, the trainee should be able to:
 - a) define the term report
 - b) explain the role of reports in an organization
 - c) name different types of reports
 - d) outline the steps of preparation
 - e) explain how to write, edit and disseminate reports
 - f) describe referencing styles
 - g) prepare power point presentations

- Competence**
- The trainee should have the ability to:
- i) prepare effective reports
 - ii) adapt reports to various audiences
 - iii) apply ICT in report writing, editing and dissemination
 - iv) present reports using power point presentations

Content

- 3.1.09T1 Definition of a report
- 3.1.09T2 Role of reports in an organization
- 3.1.09T3 Types of reports
 - i) oral
 - ii) written
 - iii) management reports
 - iv) operations procedures
 - v) production schedules
 - vi) maintenance, breakdown and accident reports
 - vii) entrepreneurship and trade reports
 - viii) internal memos
 - ix) formats of reports
- 3.1.09T4 Preparation for report writing
 - i) audience analysis
 - ii) reading skills
 - iii) data collection
 - iv) data analysis
- 3.1.09T5 Report writing, editing and dissemination
- 3.1.09T6 Referencing styles
- 3.1.09T7 Preparation of power point slides

Practice	
3.1.09P0	<i>Specific objectives</i> By the end of the sub-module unit, the trainee should be able to: a) prepare different types of reports b) edit and disseminate reports c) present a report through power point slides
	<i>Content</i>
3.1.09P1	Preparation of different types of reports
3.1.09P2	Editing and dissemination of reports
3.1.09P3	Presenting a report
3.1.10	CONDUCTING MEETINGS AND MINUTE WRITING
	<i>Theory</i>
3.1.10T0	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) define the terms meetings and minutes b) explain the role of meetings and minutes in an organization c) identify types of meetings d) discuss how to plan and conduct meetings e) highlight the challenges faced in the conduct of meetings and minute writing
	<i>Content</i>
3.1.10C	Competence The trainee should have the ability to: i) plan and conduct meetings ii) write minutes effectively
	<i>Content</i>
3.1.10T1	Definition of the terms meetings and minutes
3.1.10T2	Role of meetings and minutes in an organisation
3.1.10T3	Types of meetings
3.1.10T4	Planning and conducting meetings
3.1.10T5	Challenges in conduct of meetings and minute writing
3.1.10T6	Advantages and disadvantages of meetings
	<i>Practice</i>
3.1.10P0	<i>Specific objective</i> By the end of the sub-module unit, the trainee should be able to write minutes correctly
	<i>Content</i>
3.1.10P1	Writing minutes

3.1.11 INTERVIEWS

Theory

3.1.11T0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) explain the meaning of the term 'interview'
- b) explain the purpose of interviews in an organisation
- c) discuss the various types of interviews
- d) explain how to prepare for an interview
- e) explain the skills for interviewing

3.1.11C Competence

The trainee should have the ability to:

- i) conduct interviews
- ii) prepare for an interview as an interviewee
- iii) prepare for an interview as an interviewer

Content

3.1.11T1 Meaning of the term 'interview'

3.1.11T2 Purpose of an interviews in an organisation

3.1.11T3 Types of interviews

3.1.11T4 Preparation for an interview

- i) dressing and grooming
- ii) role of interviewer
- iii) role of interviewee
- iv) interview environment

3.1.11T5 Interviewing skills

- i) briefing skills

- ii) conducting the interview
- iii) debriefing skills

Practice

3.1.11P0 Specific Objective

By the end of the sub-module unit, the trainee should be able to role-play as an interviewer and as an interviewee

Content

3.1.11P1 Role playing the interviewer and interviewee

3.1.12 PUBLIC RELATIONS AND CUSTOMER CARE

Theory

3.1.12T0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) define the terms public, customer and public relations
- b) name different types of customers
- c) explain the role of public relations and customer care in an organisation
- d) explain interpersonal and public relations skills
- e) define quality management
- f) explain the skills in customer care
- g) explain the challenges faced in public

	relations and customer care	3.1.13	EMERGING ISSUES IN COMMUNICATION
3.1.12C	<p>Competence The trainee should have the ability to:</p> <ul style="list-style-type: none"> i) demonstrate proper public relations ii) interact with different types of people iii) care for customers appropriately 	3.1.13T0	<p>Theory</p> <p><i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to:</p> <ul style="list-style-type: none"> a) state emerging trends and issues in communication b) outline challenges posed by emerging issues c) explain ways of coping with emerging trends and issues in communication
3.1.12T1	<i>Content</i> Definition of the terms public, customer and public relations	3.1.13C	<p>Competence The trainee should have the ability to cope with emerging trends and issues</p>
3.1.12T2	Types of customers	3.1.13T1	<i>Content</i> Emerging trends and issues in communication
3.1.12T3	Role of public relations and customer care in an organization	3.1.13T2	Challenges posed by emerging trends and issues
3.1.12T4	Interpersonal and public relations skills	3.1.13T3	Ways of coping with the emerging trends and issues
3.1.12T5	Quality management		
3.1.12T6	Customer care skills		
3.1.12T7	Challenges faced in public relations and customer care		
	Practice		
3.1.12P0	<i>Specific Objective</i> By the end of the sub-module unit, the trainee should be able to apply public relation skills in dealing with the various people		<p>Suggested Teaching/Learning Activities</p> <ul style="list-style-type: none"> - Group work/presentations - Debating - Observations - Listening to lecturers/resource persons - Drama/role playing - Excursions
3.1.12P1	<i>Content</i> Application of public relation skills		

*Suggested
Teaching/Learning
Resources*

- Boards
- Charts
- Language laboratory
- Machines and equipment
 - o Power point
 - o Projectors
 - o Audio tapes
 - o Telephone or/ and fax
 - o E-mail
 - o Internet
- Lecturers and resource persons
- Library
- Newspapers/magazines /journals

*Suggested Assessment
Methods*

- Continuous assessment tests
- Term papers
- Questions and answers
- Examinations – written/oral

4.1.0 LIFE SKILLS

4.1.1 Introduction

This module unit is intended to equip the trainee with knowledge, skills, attitudes and values that empower him/her to face challenges posed by their physiological, psychological, social and economic circumstances. It will enable them to take responsibility for their individual actions.

4.1.2 General Objectives

By the end of the module unit, the trainee should be able to:

- a) develop an awareness and understanding of every day demands and challenges through critical thinking
- b) understand and deal with their health problems, fears and anxieties about growing up, sexuality and relationships
- c) enhance self-esteem and assertiveness in their relationships with peers and adults
- d) develop an appreciation of females and males as equal partners in society
- e) make optimum use of time and available resources in order to improve the quality of life
- f) develop attitudes, values and skills that promote co-existence, positive, responsible and healthy life styles
- g) develop an understanding support and a sense of care and responsibility for disadvantaged groups in the community

4.1.3 Module Unit Summary and Time Allocation

Code	Sub-Module Units	Content	Time (First)		
			Theory	Practice	Total
4.1.01	Introduction to Life Skills	<ul style="list-style-type: none">• Define the term life skills• Categories• Benefits• Living values and our lives• Relationship between life skills and living values			2
4.1.02	Knowing and Living With Oneself: Self Awareness	<ul style="list-style-type: none">• Self description• Self assessment• Challenges that hinder the	2	2	4

Code	Sub-Module Units	Content	Time (Hrs)		
			Theory	Practice	Total
		<p>attainment of life goals</p> <ul style="list-style-type: none"> • Strategies of overcoming challenges • Values associated with self awareness skill 			
4.1.03	Self Esteem	<ul style="list-style-type: none"> • Definition of self esteem • Signs of high and low self esteem in an individual • Signs of low self-esteem • Effects of low self-esteem • Factors that enhance high and low esteem • Importance of high self-esteem • Values associated with high self esteem • How to boost self-esteem 	1	i	2
	-'JIC--'m				
4.1.04	Stress Management	<ul style="list-style-type: none"> • Definition of emotion • Definition of stress • Causes of stress • Effects of stress • Coping with stress • Forms of positive stress • Values associated to positive stress management 	1	1	2
4.1.05	Coping with Emotions	<ul style="list-style-type: none"> • Definition of emotion • Good and bad feelings • Causes of good and 	i	1	2

Code	Sub-Module Units	Content	Time (Hours)		
			Theory	Practice	Total
		<ul style="list-style-type: none"> bad feelings • Meaning of emotional intelligence • Feelings which can lead to risky behaviour • Ways of coping with negative emotions • Values associated with emotional intelligence 			
4.1.06	Empathy	<ul style="list-style-type: none"> • Definition of empathy • Importance • Difference between empathy and sympathy • Situations requiring empathy • Values associated with empathy 	2	2	4 Va
4.1.07	Assertiveness	<ul style="list-style-type: none"> • Definition of assertiveness • Characteristics of an assertive person • Steps to being assertive • Difference between assertiveness and aggression • Difference between peer pressure and influence • Values associated with assertiveness 	2	2	4 *.r- - r;-
4.1.08	Negotiation	<ul style="list-style-type: none"> • Definition of negotiation • Importance • Situations that require negotiating 	2	2	4

Code	Sub-Module Units	Content	Time (Hrs)		
			Theory	Practice	Total
		<ul style="list-style-type: none"> • Negotiating techniques • Values associated with negotiations 			
4.1.09	Non-Violent Conflict Resolution	<ul style="list-style-type: none"> • Definition of conflict • Causes of conflict • Consequences • Types of conflict • Ways of dealing with conflict — • Skills for conflict management • Institutions that resolve conflict in community • Values related to conflict resolution 	1	1	2
4.1.10	Effective Decision Making	<ul style="list-style-type: none"> • Situations that require decision making • Challenges facing youth in decision making • Factors influencing decisions making • Steps to effective decision making • Consequences • Decision making institutions within community • Steps to effective decision making • Values associated with effective decision making 	2	2	4
4.1.11	Critical Thinking	<ul style="list-style-type: none"> • Meaning of critical thinking • Risky situations • Evaluating ideas or issues objectively 	2	2	4

Code	Sub-Module Units	Content	Time (Hrs)		
			Theory	Practice	Total
		<ul style="list-style-type: none"> • Consequences of making decisions before critical thinking • Values associated with critical thinking 			
4.1.12	Creative Thinking	<ul style="list-style-type: none"> • Definition • Situations that require creative thinking • Importance • Consequences • Associated values 	2	2	4
4.1.13	Problem Solving	<ul style="list-style-type: none"> • Problem areas • Causes of problems • Tools • Problem solving process • Values necessary for solving problems 	2	1	3
4.1.14 *	Leisure	<ul style="list-style-type: none"> • Definition of leisure • Effects of misuse of leisure • Activities for positive leisure • Life skills for positive use of leisure • Values 	2	1	3
4.1.15	Time Management	<ul style="list-style-type: none"> • "Definition • Work schedule • Time management chart • Importance • Time robbers • Values and associated life skills 	1	1	2
4.1.16	Gender Education	<ul style="list-style-type: none"> • Definition • Agents perpetuating gender • Gender stereotyping 	1	1	2

Code	Sub-Module Units	Content	Time (Hrs)		
			Theory	Practice	Total
		<ul style="list-style-type: none"> • Effects of gender • Strategies to eliminate gender discrimination • Associated values 			
4.1.17	Drug And Substance Abuse	<ul style="list-style-type: none"> • Definition of terms <ul style="list-style-type: none"> • Commonly abused drugs • Causes • Symptoms • Effects • Relationship between drug abuse and HIV and AIDS • Prevention • Management • Life skills and values necessary 	2	2 - - —	4
4.1.18	HIV and AIDS	<ul style="list-style-type: none"> » Definition of terms • Transmission • Signs and symptoms „ Catalysts • Prevention « Interventions • Misconceptions • Care and support 	2	1	3
4.1.19	Child Labour	<ul style="list-style-type: none"> • Definition of terms • Difference between child labour and work • Forms of child labour <ul style="list-style-type: none"> • Factors leading to child labour • Awareness on child labour • Interventions • Appropriate life skills 	2	2 “T	4
4.1.20	Child Rights	<ul style="list-style-type: none"> • Definition of terms • Types of human 	2	1	3

Code	Sub-Module Units	Content	Time (Hrs)		
			Theory	Practice	Total
		<p>needs</p> <ul style="list-style-type: none"> • UN conventions • Categories of child rights • Importance of child rights • Responsibilities • Principles in right of child • Life skills and values 			
4.1.21	Relationships	<ul style="list-style-type: none"> • Types of relationships <ul style="list-style-type: none"> » Developing healthy relationships • Factors that influence healthy relationships • Maintaining healthy relationships • Influence of relationships on behaviour • Values associated with relationship • Life skills 	2	2	4
	Total Time			34	32
					66

4.1.01	INTRODUCTION TO LIFE SKILLS	<ul style="list-style-type: none">) Education i) Social ii) Health
	Theory	<p>4.1.01T4 Living values and our lives 4.1.01T5 Relationship between life skills and living values</p>
4.1.01TO	<i>Specific Objectives</i>	
	<p>By the end of the sub-module unit, the trainee should be able to:</p> <ul style="list-style-type: none"> a) define the term life skills b) outline the categories of life skills c) explain the benefits of life skills education to the society d) explain living values and how they relate to our lives e) explain the relationship between life skills and living values 	
4.1.020 Competence	<p>V-</p> <p>The trainee should have the ability to:</p> <ul style="list-style-type: none"> i) identify one's strengths and weaknesses ii) identify one's talents iii) set realistic goals 	<p>By the end of the sub-module unit, the trainee should be able to:</p> <ul style="list-style-type: none"> a) outline ways of describing him/herself b) outline ways of assessing self c) explain limitations/challenges that hinder one from attaining one's goals in life d) outline strategies of overcoming the challenges c) explain values associated with the self awareness skill
	<i>Content</i>	
4.1.01T1	Definition of term life skills	<i>Content</i>
4.1.01T2	Categories of life skills	4.1.02T1 Self Description
	<ul style="list-style-type: none"> i) Skills of knowing and living with oneself • <i>K/<u>Q</u>U<u>I</u>Ie.<u>n</u>f <u>Yp</u>o<u>M</u>/ma and living with others</i> iii) Skills of making effective decisions 	<ul style="list-style-type: none"> i) who am I? ii) physical attributes iii) life vision and mission
4.1.01	T3 Benefits of life skills education to the society in the following sectors	4.1.02T2 Self assessment
		<ul style="list-style-type: none"> i) strengths and weaknesses

- 4.1.02T3 Challenges that hinder the attainment of life goals
- 4.1.02T4 Strategies of overcoming challenges
- 4.1.02T5 Values associated with the self awareness skill

Practice

4.1.02P0 Specific Objectives

- By the end of the sub-module unit, the trainee should be able to:
- a) draft a self analysis table describing personal values, beliefs, goals and ambition
 - b) draft a life vision and mission

Content

- 4.1.02.P1 Drafting of a self analysis table describing personal values, beliefs, goals and ambitions

- 4.1.02P2 Drafting of a life vision and mission

4.1.03 SELFESTEEM

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4.1.03TO Specific Objectives

- By the end of the sub-module unit, the trainee should be able to:
- a) define the term self esteem
 - b) outline signs of high self esteem in an individual
 - c) outline signs of low self esteem in an individual

- d) explain factors that enhance high and low self esteem
- e) state the importance of having high self esteem
- f) describe the effects of low self esteem
- g) highlight values associated with high self esteem
- h) explain ways of boosting self esteem

4.1.03C Competence

The trainee should have the ability to:

- i) have a feeling of self worth
- ii) relate well with others
- iii) be confident
- iv) have positive self pride
- v) feel good about oneself

Content

- 4.1.03T1 Definition of self-esteem

- 4.1.03T2 Signs of high self-esteem

- i) self confidence
- ii) self discipline
- - • iii) relating well with others
- iv) self care

- 4.1.03T3 Signs of low esteem

- i) isolation
- ii) self doubt
- iii) self neglect
- iv) vulnerability
- v) aggressiveness
- vi) low performance of tasks

- 4.1.03T4 Effects of low self esteem

- i) unhappiness
- ii) vulnerability to HIV infection

	iii) drug abuse iv) physical and emotional abuse	4.1.04 STRESS MANAGEMENT
4.1.03T5	Factors that enhance high self-esteem i) good health habits ii) goal setting iii) good grooming	Theory
4.1.03T6	Importance of high self-esteem	4.1.04T0 <i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to:
4.1.03T7	Values associated with high self esteem i) humility ii) self respect iii) happiness	a) define stress b) describe situations that lead to stress c) discuss effects of stress d) suggest ways of coping with stress e) identify forms of positive stress f) give values associated to positive stress management
4.1.03T8	Ways of boosting self esteem i) Praise/acknowledging effort	

Practice

4.I.03P0	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) express feelings of self hate and self acceptance in group or one-on-one counseling session b) demonstrate self pride and confidence
<i>Content</i>	

4.1.03P1 Expressing one's feelings of self hate and self acceptance in group or one-on-one counseling session

4.1.03P2 Role play a situation of self pride and confidence

4.1.04C Competence

The trainee should have the ability to:
i) identify stressors
ii) avoid stressors
iii) manage stress

Content

4.1.04T1 Definition of stress

4.1.04T2 Causes of stress

- i) growth and development (biological, physical and mental)
- y ii) peer pressure
- ;ii) communication within families
- iv) need to belong
- v) lack of positive time management-
- vi) displacement
- vii) conflicts

4.1.04T3 Effects of stress

- i) displacement
- ii) aggression

- iii) social maladjustment
- iv) drug and substance abuse
- v) immorality
- vi) diseases such as HIV and Aids
- vii) post traumatic stress disorders

4.1.04T4 Coping with stress

- i) organise work in order of priority/work within possible working schedules
- ii) take a break/relax
- iii) exercise
- iv) share feelings with others

4.1.04T5 Forms of positive stress

4.1.04T6 Values associated to

- positive stress management
- i) peace
- ii) tolerance
- iii) co-operation
- iv) unity
- v) avoid stressors
- vi) cope / manage stress
- vii) apply values to manage stress

Practice

4.1.04P0 Specific Objective

By the end of the sub-module unit, the trainee should be able to identify positive ways of stress management

Content

4.1.04P1 Role-play a stressful situation and identify positive ways of stress management

4.1.05 COPING WITH EMOTIONS

Theory

4.1.05T0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) define the term 'emotion'
- b) identify good and bad feelings
- c) explain causes of each feeling
- d) explain the meaning of emotional intelligence
- e) discuss feelings which can lead to risky behaviour
- f) suggest ways of coping with emotions
- g) state values associated with emotional intelligence

4.1.05C Competence

The trainee should have the ability to:

- i) be calm
- ii) be patient
- iii.) take time before acting

Content

4.1.05T1 Definition of the term 'emotion'

4.1.05T2 Good and bad feelings

4.1.05T3 Situations that require empathy

4.1.05T4 Causes of good/bad feelings

4.1.05T5 Feelings which can lead to risky behaviour

- i) bitterness
- ii) sadness

- iii) excitement
 - iv) hurt
- 4 ! 05T? Meaning nf emotional intelligence
- 4.1 05T6 How to control negative emotions
- i) talk to somebody
 - ii) take a break/sleep/rest/walk
 - iii) do exercises
- 4.1.05T7 Values associated with emotional intelligence
- i) peace
 - ii) humility
 - iii) tolerance
 - iv) respect
- d) explain situations that require empathy
 - e) outline values associated with empathy

4.1.06C Competence

The trainee should have the ability to:

- i) empathise with people in need
- ii) demonstrate positive values in situations that require empathy

Content

4.1.06T1 Definition of empathy

4.1.06T2 Importance of empathising e.g. in times of

- i) death
- ii) HIV/AIDS infected or affected
- iii) joblessness
- iv) sickness

4.1.06T3 Difference between empathy and sympathy

4.1.06T4 Values associated with empathy

-) responsibility
- i) respect
- ii) love
- v) kindness
- v) co-operation
- vi) tolerance

4.I.5PO Specific Objective

By the end of the sub-module unit, the trainee should be able to identify different kinds of emotions

Content

4.1.5P1 Identify different kinds of emotions from photographs and video clips

4.1.06 EMPATHY

Theory

4.1.06T0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) define empathy
- b) explain the importance of empathising
- c) explain the difference between empathy and sympathy

Practice

4.1.06P0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to differentiate empathy from sympathy

<p><i>Content</i></p> <p>4.1.06P1 Role play situation and differentiate empathy from sympathy</p>	<p>4.1.07 ASSERTIVENESS</p> <p>Theory</p> <p>4.1.07T0 <i>Specific Objectives</i></p> <p>By the end of the sub-module unit, the trainee should be able to:</p> <ul style="list-style-type: none"> a) define assertiveness b) explain characteristics of assertive behaviour c) describe steps to being assertive d) explain the importance of being assertive e) differentiate being assertiveness from being aggressive and passive f) explain the difference between peer pressure and peer influence g) outline values associated with assertiveness <p>Co ni pc iciHx. The trainee should have the ability to:</p> <ul style="list-style-type: none"> i) be firm without being influenced by others ii) say NO to negative influence or YES to positive behaviour <p><i>Content</i></p> <p>4.1.07T1 Definition of assertiveness</p> <p>4.1.07T2 Identify characteristics of an assertive person</p> <p>4.1.07T3 Steps to being assertive</p>	<p>4.1.07T4 Importance of being assertive:</p> <ul style="list-style-type: none"> i) achieving ones goals ii) avoiding getting into trouble <p>4.1.07T5 Differentiate between aggressiveness and passiveness</p> <p>4.1.07T6 Differentiate peer pressure from peer influence</p> <p>4.1.07T7 Values associated with assertiveness:</p> <ul style="list-style-type: none"> i) honesty ii) love iii) co-operation iv) simplicity <p>Practice</p> <p>4.1.07P0 <i>Specific Objective</i></p> <p>By the end of the sub-module unit, the trainee should be able to illustrate assertiveness, passiveness and aggression</p> <p><i>Content</i></p> <p>4.1.07P1 Role play situations and illustrate assertiveness, passiveness and aggression</p>
		<p>IA.i'.x NEGOTIATION</p> <p>Theory</p> <p>4.1.08T0 <i>Specific Objectives</i></p> <p>By the end of the sub-module unit, the trainee should be able to:</p> <ul style="list-style-type: none"> a) define the term negotiation b) explain the importance of negotiation c) highlight situations that require negotiation

- d) discuss possible negotiating techniques associated with negotiations

4.1.08C Competence

- The trainee should have the ability to:
- i) get out of difficult situations
 - ii) come up with alternatives

Content

- 4.1.08T1 Definition of negotiation
- 4.1.08T2 Importance of negotiation
- 4.1.08T3 Situations that require negotiations
- 4.1.08T4 Negotiating techniques
- 4.1.08T5 Values related to negotiation
 -) tolerance
 - i) responsibility
 - ii) co-operation
 - v) honesty
 - v) respect

Practice

4.1.08P0 Specific Objective

By the end of the sub-module unit, the trainee should be able to identify negotiation techniques

Content

- 4.1.08P1 Watch a video on peace negotiation and identify negotiation techniques

4.1.09 NON-VIOLENT CONFLICT RESOLUTION

Theory

09T0 Specific Objectives

- By the end of the module sub-unit the trainee should be able to:
- a) define the term conflict
 - b) explain causes of conflicts
 - c) explain consequences of conflicts
 - d) state the different types of conflicts
 - e) explain constructive ways of dealing with conflicts
 - f) state skills for peaceful conflicts
 - g) highlight institutions that resolve conflicts in the community
 - h) outline values in resolving conflicts

4.1.09C

Competence

The trainee should have the ability to resolve conflicts peacefully

Content

- 4.1.09T1 Meaning of conflicts
- 4.1.09T2 Causes of conflicts
- 4.1.09T3 Consequences of conflicts
- 4.1.09T4 Types of conflicts (siblings, parents, relatives, communities or clans etc)
- 4.1.09T5 Ways of dealing with conflicts
- 4.1.09T6 Conflict resolution skills
 - i) empathy
 - ii) seeking assistance

- in) respect others
 - iv) assertiveness
 - v) negotiation
- 4.1.09T7 Institutions that resolve conflicts in the community
- i) courts
 - ii) religious institutions
 - iii) committees
 - iv) council of elders
- 4.1.09T8 Values related to conflict resolution
- i) co-operation
 - ii) humility
 - iii) tolerance
 - iv) responsibility
 - v) peace as a core value in conflict resolution
- youth that would require effective decision making**
- c) outline factors that influence decision making
 - d) discuss the steps to effective decision making
 - e) discuss consequences of not making effective decisions
 - f) highlight decision making institutions within community
 - g) outline values associated with effective decision making

Practice

4.1.09P0 Specific Objective

By the end of the sub-module unit, the trainee should be able to identify ways of preventing conflicts

Content

- 4.1.09P1 Watch video clips on conflict and suggest ways of preventing conflicts

4.1.10 EFFECTIVE DECISION MAKING

Theory

4.1.10T0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) discuss situations that require decision making
- b) state everyday challenges facing the

4.1.IOC Competence

The trainee should have the ability to:

- i) make effective decisions
- ii) weigh options before making decisions

Content

- 4.1.10T1 Situations that require decision making

- T1.10T2 Challenges facing the

youth such as:

- i) unplanned pregnancies
- ii) peer pressure/peer influence
- iii) drug abuse
- iv) HIV and other Sexually transmitted Infections
- v) orphaned
- vi) relationships
- vii) career choices

- 4.1.10T3 Factors that influence decision making

- i) experiences

- ii) uniqueness
- 4.1 10T4 Steps to effective decision
moli'inn
- 4.1.10X5 Consequences of not making effective decisions
- 4.1.10T6 Decisionmaking institutions within the community
- i) family
 - ii) schools /colleges
 - iii) courts
 - iv) peer arbitrators
 - v) religious bodies
- 4.1.10T7 Values associated with effective decision making
- i) honesty
 - ii) integrity
 - iii) peace
 - iv) kindness
- Practice**
- 10P0 *Specific Objectives*
 By the end of the sub-module unit, the trainee should be able to identify challenges facing the youth and suggest ways in which youth can make effective decisions in life
- Content*
- .10P1 Dramatise challenges facing the youth and suggest ways in which youth can make effective decisions in life

- a) explain the meaning of critical thinking
- .../ *pvnjom tl-i-o mcomnn AF*
- critical thinking
- b) describe risky situations
- c) discuss possible ways of evaluating ideas or issues objectively
- d) discuss the consequences of making decisions before thinking
- critically
- e) outline values associated with critical thinking

4.1.11C Competence

The trainee should have the ability to:

- i) think fast and analyse situations before acting
- ii) anticipate consequences

Content

4.1.11T1 Meaning of critical thinking

4.1.1 1T2 Risky situations

- i) what constitutes the risk
- ii) pleasurable activities without risks

4.1.11T3 Evaluating ideas/issues objectively

- i) weighing options
- ii) making rational choices,

4.1.11T4 Consequences of making decisions before thinking critically

- i) possibility of falling victim to HIV infection

4.1.11 CRITICAL THINKING

Theory

- 4.1.1 1 TO *Specific Objectives*
 By the end of the sub-module unit, the trainee should be able to:

- ii) drug and substance abuse
 - iii) unplanned pregnancy
 - iv) early marriage
 - v) physical and psychological abuse
- 4.1.1 1T5 Values associated with critical thinking

Practice

4.1.11PO Specific Objective

By the end of the sub-module unit, the trainee should be able to identify ways of evaluating issues in risky situations

Content

- 4.1.1 IP 1 Drama a risky situation and identify ways of evaluating issues objectively

4.1.12 CREATIVE THINKING

Theory

4.1.12T0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) define the term creative thinking
- b) discuss situations that require creative thinking
- c) discuss the importance of being creative
- d) highlight the consequences of not being creative
- e) state values required in creative thinking

4.1.12C Competence

The trainee should have the ability to make alternative choices

Content

- 4.1.12T1 Definition of the term creative thinking
 4.1.12T2 Situations/issues that require creative thinking
 4.1.12T3 Importance of being creative
 4.1.12T4 Consequences of not being creative
 4.1.12T5 Associated values

Practice -V- - '• <ff

4.1.12P0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to differentiate between creative thinking and non-creative thinking

Content

- 4 I2P1 Watch video clips with situations on creative thinking and non-creative thinking and differentiate between the two.

4.1.13 PROBLEM SOLVING

Theory

4.1.13T0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) explain problem areas that require solutions
- b) state causes of problems

- c) name tools used in problem solving
- ~~d) explain the problem solving process~~
- e) state values necessary for solving problems

4.1.13C Competence

The trainee should have the ability to effectively solve problems

Content

4.1.13T1 Problem areas

- i) in school
- ii) at home
- iii) with peers
- iv) in relationships

4.1.13T2 Causes of the problem

4.1.13T3 Tools available for solving problems

4.1.13T4 Problem solving process

- i) identify alternative choices
- ii) weighing options
- iii) action

4.1.13T5 Values required in the problem solving process

-) responsibility
- i) honesty
- ii) kindness
- v) love

Practice

4.1.13P0 Specific Objective

By the end of the sub-module unit, the trainee should be able to identify and analyze problems

Content

4.1.13P1 Dramatise problem situations and identify and analyse problems

4.1.14 LEISURE

~~WELL CUIJ~~

.14 TO Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) define leisure and related concepts
- b) explain the effects of misuse of leisure time
- c) list activities for positive leisure
- d) highlight life skills for positive use of leisure
- e) outline values associated with leisure

4.1.14C Competence

The trainee should have the ability to use leisure time positively and constructively

Content

.14T1 Definition of terms:

-) leisure
 - i) leisure time
 - ii) active leisure
 - v) passive leisure

4.1.14 T2 Effects of misuse of leisure time

- i) drug and substance abuse
- ii) HIV and AIDS infection
- iii) STDs
- iv) criminal activities

^{^f} for non-f

leisure

- i) ball games
- ii) athletics
- iii) swimming
- iv) reading
- v) singing

/ 1 1 1 /1T3

4.1.14T4 Life skills for positive use of leisure time

- i) empathy
- ii) problem solving
- iii) creative thinking
- iv) critical thinking
- v) assertiveness
- vi) negotiation

4.1.14T5 Values associated with leisure

- i) freedom
- ii) tolerance
- iii) humility
- iv) honesty

Practice

4.1.14P0 *Specific Objectives*

By the end of the sub-module unit, the trainee should be able to identify and organise personal leisure time

Content

4.1.14PI Critique personal leisure and leisure time and make adjustments

4.1.15 TIME MANAGEMENT

Theory * * — * - - - -

4.1.15T0 *Specific Objectives*

By the end of the sub-module unit, the trainee should be able to:

- a) define the concepts of time management
- b) explain how to make a work schedule
- c) explain the components of a time management chart
- d) explain the importance of managing time

- e) highlight aspects of time robbers
- f) state associated values and life skills
- g) explain associated life skills

4.1.15C Competence

The trainee should have the ability to:

- i) manage time effectively
- ii) be organized and focused
- iii) achieve set goals
- iv) meet others / clientele's satisfaction

Content

4.1.15T1 Definition of the concepts 'time management'

4.1.15T2 Work schedule

4.1.15T3 Time management chart to include for example

- i) leisure time
- ii) working time
- iii) exercise and games
- iv) helping the needy
- v) meal times
- vi) cleaning time
- vii) rest

4.1.15T4 Importance of managing time

- i) focus on priorities
- ii) sense of direction
- iii) attain goals
- iv) reduce/avoid stress
- v) satisfy others/clients

4.1.15T5 Time robbers

- i) procrastination
- ii) talking too long
- iii) lack of priorities
- iv) day dreaming
- v) excessive playing
- vi) Indecisiveness
- vii) disorganization

- viii) uncontrolled media influence
- 4.1.15T6 Values associated with
- i) effective decision making
 - ii) honesty simplicity
 - iii) responsibility
- 4.1.15T7 Associated life skills
- i) assertiveness
 - ii) self awareness
 - iii) self esteem
 - iv) communication
 - v) decision making

Practice

4.1.)5P0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) identify time robbers
- b) draft a time management chart

Content

- 4.1.15P1 Watch video cup and identify time robbers
- 4.1.15P2 Drafting of a time management chart

4.116 GENDER EDUCATION

Theory

4.1.16T0 Specific Objectives

By the end of the sub-module unit the trainee should be able to:

- a) define the term gender
- b) describe various agents that perpetuate gender
- c) highlight types of gender stereotypes

- d) describe the effect of gender on an individual's life
- e) explain possible ways of eliminating gender discrimination
- f) outline values associated to gender

4.1.16C Competence

The trainee should have the ability to eliminate gender discrimination

Content

- 4.1.16T1 Definition of gender
- 4.1.16T2 Agents perpetuating gender
- 4.1.16T3 Gender stereotyping
- 4.1.16T4 Effects of gender on an individual's life
- 4.1.16T5 Strategies to eliminate gender discrimination
- 4.1.16T6 Associated values

Practice

4.1.16P0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) identify how culture views men/women/boys/girls
- b) list the roles assigned to men and women, boys and girls

Content

- 4.1.16P1 Watch video clip and identity cultural views on men/women/boys and girls

- 4.1.16P2 Critique own community and identify roles assigned to men and women, boys and girls**

4.1.17 DRUG AND SUBSTANCE ABUSE

Theory

4.1.17T0 Specific Objectives

- By the end of the sub-module unit, the trainee should be able to:
- a) definition of terms: drug, substance abuse and drug misuse
 - b) state commonly abused drugs
 - c) explain the causes of drug and substance abuse
 - d) highlight signs and symptoms of drug and substance abuse
 - e) explain the effects of drugs and substance abuse
 - f) explain the relationship between drug and substance abuse and **HIV** and **AIDS**
 - g) explain ways of managing drug and substance abuse cases
 - h) explain ways of preventing drug and substance abuse
 - i) outline life skills and values necessary in the prevention and management of drug and substance abuse

4.1.17C Competence

The trainee should have the ability to:

- i) live a drug free life
- ii) advocate for a drug free society

- iii) assist in rehabilitating drug and substance abusers
- iv) be a role model!

Content

- 4.1.17T1 Definition of terms: drug and substance abuse and drug misuse
- 4.1.17T2 Commonly abused drugs and substances:
 - i) alcohol
 - ii) tobacco
 - iii) bhang
 - iv) miraa
 - v) glue
- 4.1.17T3 Causes of drug and substance abuse
- 4.1.17T4 Signs and symptoms of drug and substance abuse
- 4.1.17T5 Effects of drug and substance abuse
- 4.1.17T6 Relationship between drug abuse and HIV and AIDS
- 4.1.17T7 Explain ways of preventing drug and substance abuse
- 4.1.17T8 Management of drug and substance abuse
 - i) treatment
 - ii) rehabilitation
 - iii) re-integration
- 4.1.17T9 Preventive measures to drug and substance abuse
- 4.1.17T10 Life skills and values necessary in the prevention of drug and substance abuse
 - i) life skills
 - ii) assertiveness
 - iii) self awareness
 - iv) self esteem
 - v) communication
 - vi) decision making
 - vii) values

- viii) integrity
- ix) love
- x) freedom
- xi) responsibility

Practice

4.1.17P0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) identify commonly abused drugs and their street names
- b) draft a speech on drug and substance abuse

Content

- 4.1.17P1 identify commonly abused drugs and their street names within community
 4.I.17P2 Draft a speech on drug and substance abuse and deliver it at a community *barazci*

4.1.18 HIV AND AIDS

Theory

4.1.18T Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) define the terms HIV and AIDS
- b) state ways through which HIV is transmitted
- z) “describe signs and symptoms of AIDS
- d) outline the catalysts of HIV and AIDS

- e) explain the interventions for HIV
- f) explain the misconceptions about AIDS
- g) explain ways of taking care and supporting the affected and infected

4.1.18C Competence

The trainee should have the ability to:

- i) live a HIV free life
- ii) care for an infected person
- iii) protect him / herself from infection
- iv) advocate for HIV and Aids free society

Content

- 4.1.18T1 Definition of terms: HIV and Aids
 4.1.18T2 Ways through which HIV is transmitted
 4.1.18T3 Signs arid symptoms of Aids
 4.1.18T4 Catalysts of the spread of HIV and Aids
 4.1.18T5 Ways of preventing spread of HIV and Aids
 - i) life skills education
 - ii) values
 - iii) counseling
 4.1.18T6 Interventions of HIV and AIDS
 4.1.18T7 Outline life skills and - values that help in the prevention of HIV and AIDS
 4.1.18T8 Myths and misconception about HIV and Aids
 4.1.18T9 Explain ways of

- preventing HIV infection
- 1.1 8T1 0 Care and support of the infected and affected
- 1.18T1 1 Discuss factors that facilitate the spread of HIV and AIDS

Practice

4.1.18P Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- identify HIV catalysts
- care for and support infected and affected

Content

- 4.1.18P1 Identifying HIV catalysts within the community and suggest possible interventions
- 4.1.18P2 Visit a children's home for children infected with HIV and offer psycho-social support

4.1.19 CHILD LABOUR

Theory

Spc. ic Objesr-ive

By the end of the sub-module unit, the trainee should be able to:

- define terms relating to child labour
- explain the difference between child labour and child work
- outline forms of child labour
- explain factors that lead children to labour
- outline how to assess the community level

of awareness on child labour

- explain interventions possible to eliminate child labour
- discuss appropriate life skills in saying "NO" to child labour

4.1.19C Competence

The trainee should have the ability to:

- differentiate child work from child labour
- put appropriate interventions to worst forms of child labour
- work responsibly

Content

4.1.19T1 Definition of terms

- child
- child labour
- child work

4.1.19T2 Difference between child labour and child work

4.1.19T3 Forms of child labour

- herding
- selling/peddling drugs
- farm hand
- navvking
- transport operators

4.1.19T4 Factors leading to child labour

- poverty
- negligence of parents
- ignorance of child rights
- orphaned

4.1.19T5 Community level of awareness on child labour

- are they many or few?
- how many are aware?

	iii) what are their views in child labour iv) what are their views in children being engaged in work	community awareness of child labour
4.1.19T6 Possible interventions to eliminate child labour	4.1.20 CHILD RIGHTS	Theory
i) enforcing laws on child rights ii) rents, children, teachers, employers and communities iii) educating children through curriculum iv) empowering community leaders and local administration v) organizing lobby groups at community levels vi) setting help/ reporting desks at community levels	4.I.20T0 <i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) define terms: human rights, abuse, neglect, labour, needs, ratification b) discuss types of human needs c) describe UN conventions on rights of the child d) describe the categories of child rights e) explain the importance of child protection and rights f) explain the responsibilities relating to child rights g) highlight principles in the right of a child h) state related values and life skills	
4.1.19T7 Associated hfe skills include: i) negotiation ii) assertive iii) communication iv) decision making v) empathy		
Practice	4.1.20C Competence The trainee should have the ability to: i) advocate for human rights and protection ii) intervene in case of child abuse or child neglect defend own self in case of abuse	
4.1.19P0 <i>Specific Objective</i> By the end of the sub-module unit, the trainee should be able to examine levels of awareness of child labor in community	<i>Content</i>	
4.1.19P1 Examine through field trips the levels of	4.1.20T1 Definition of terms: i) human rights	<i>Content</i>

- ii) abuse
 - iii) neglect
 - iv) labour
 - v) needs
 - vi) ratification
- 4.1.20T2 Types of human needs
- i) physical
 - ii) psychological
- 4.1.20T3 UN Convention on the Rights of the Child (1989)
- i) articles
- 4.1.20T4 Categories of child rights
- 4.1.20T5 Importance of child rights and child protection
- 4.1.20T6 Responsibilities relating to child's rights
- 4.1.20T7 Principles of child rights
- i) best interests of the child
 - ii) rights apply to every child without discrimination on basis of gender race, age, ability, religion
- 4.1.20T8 Life skills and values associated with child rights

Practice

4.' 20F0

By the end of the sub-module unit the trainee should be able to identify child rights

Content

- 4.1.20P1 Examine through a field trip the responsibilities related to child's rights in the community

4.1.21 RELATIONSHIPS

Theory

4.1.21 TO Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) discuss different types of relationships
- b) explain ways of developing healthy relationships
- c) state factors that influence the maintenance of healthy relationships
- d) explain how to maintain a healthy relationship
- e) explain how relationships influence behavior
- f) outline values associated with relationships
- g) outline life skills associated with relationships

4.L2IC CnmpefeE c.e_

The trainee should have the ability to maintain healthy relationships with respect towards each other

Content

4.1.21T1 Types of relationships

- i) peer/peer
- ii) boy/girl: man/woman
- iii) siblings relationships
- iv) parent/child
- v) employee/ employer
- vi) client/service provider

- vii) husband/wife
- 4.1.21 T2 Developing healthy relationships
- 4.1.21 T3 Factors that influence healthy relationships
- i) personality
 - ii) generation gap
 - iii) experiences in life
- 4.1.21T4 Maintaining healthy relationships
- i) waiting until marriage
 - ii) upholding associated values and life skills
 - iii) self-sacrifice
- 4.1.21T5 Influence of relationship on behaviour
- i) negative influence
 - ii) positive influence
- 4.1.21T6 Values associated with relationships
- i) love
 - ii) kindness
 - iii) understanding
 - iv) responsibility
 - v) freedom
 - vi) tolerance
- 4.1.21T7Life skills associated with relationships
- i) assertiveness
 - ii) awareness
 - iii) communication
 - iv) negotiation
 - v) peer resistance
 - vi) friendship formation
 - vii) coping with stress
 - viii) coping with emotions
 - ix) decision making

Practice

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By the end of the sub-module unit, the trainee should be able to identify different types of relationships

Content

- 4.1.21P1 Watch video clips and identify healthy relationships

Suggested Teaching/Learnmg Resources

- Boards
- Charts
- The computer
- Internet
- Overhead projector
- Video tapes
- Library
- Textbooks
- The media
- Guest speakers

Suggested Teaching/Learnmg Activities

- Group work
- presentation
- Individual presentation
- Drama/role playing
- Excursion
- Observation

Suggested Assessment Methods

- Continuous Assessment Tests (CATs)
- Term papers
- Questions and answers
- Examinations

5.1.0 ENTREPRENEURSHIP SKILLS

5.1.01

Introduction

This module unit is intended to equip the trainee with necessary knowledge; skills, values and attitudes that will enable him/her plan start, and manage a personal, group, private or public business enterprise effectively. It is also intended to instill in a trainee the drive necessary to venture into profit making business activities.

5.1.02

General Objectives

By the end of the module unit, the trainee should be able to:

- a) Acquire entrepreneurial competencies necessary for planning, starting and managing modern business
- b) Demonstrate positive attitude towards self employment
- c) Portray desire to venture into business
- d) Identify viable business opportunities
- e) Demonstrate entrepreneurial behavior in planning, starting, and managing a business enterprise
- f) Demonstrate creativity and innovation in the day to day business activities
- g) Appreciate the role of business planning
- h) Appreciate the emerging trends and issues related to the business environment

5.1.03

Module Summary and Time Allocation

Code	Sub-Module Units	Content	Time (Hrs)		
			Theory	Practice	Total
5.1.01	Introduction to Entrepreneurship	<ul style="list-style-type: none">• Terms used in entrepreneurship• Difference between self employment and salaried employment• Contribution of entrepreneurship to national development• Contribution of entrepreneurship to national development• Advantages and disadvantages of self salaried employment	1	1	2

Code	Sub-Module Units	Content	Time (Hrs)		
			Theory	Practice	Total
5.1.02	Evolution of Entrepreneurship	<ul style="list-style-type: none"> • History of entrepreneurship globally and in Kenya • Myths associated with entrepreneurship in Kenya. • Theories of entrepreneurship • Importance of entrepreneurship theories • Entrepreneurial environment • Myths associated with entrepreneurship in Kenya 	2	2	4
5.1.03	The Entrepreneur	<ul style="list-style-type: none"> • Types of entrepreneurs • Qualities of an entrepreneur • Roles of an entrepreneur in an enterprise 	2	2	4
5.1.04	Creativity and Innovation	<ul style="list-style-type: none"> • Meaning of creativity and innovation • Process of creativity and innovation • Importance of creativity and innovations • Barriers to creativity and innovation • Managing barriers to creativity and innovation • Ways of improving a given product or service • Identification of a product and the ways it can be used 	4	2	6
5.1.05	Entrepreneurial Culture	<ul style="list-style-type: none"> • Concept of entrepreneurial culture • Habits that promote entrepreneurial 	3	1	4

Code	Sub-Module Units	Content	Time (Hrs)		
			Theory	Practice	Total
		<ul style="list-style-type: none"> development • Factors inhibiting entrepreneurial development • Ways of managing factors that inhibit development of entrepreneurial culture • Factors that promote or inhibit entrepreneurial culture 			
5.1.06	Entrepreneurial Opportunities	<ul style="list-style-type: none"> • Meaning of business opportunity • Ways of generating business ideas • Evaluation of business opportunities for viability • Brainstorming for business ideas and evaluation for their viability 	2	2	4
5.1.07	Entrepreneurial Motivation	<ul style="list-style-type: none"> • Definition of terms • Entrepreneurial motivation factors 	1	1	2
5.1.08	Entrepreneurial Competences	<ul style="list-style-type: none"> • Definition of entrepreneurial competences • Key entrepreneurial competences 	1	1	2
5.1.09	Starting a Small Business	<ul style="list-style-type: none"> • Procedure of starting a small enterprise • Factors to be considered when starting a small enterprise • Legal Forms of business • Challenges faced when starting a small enterprise • Business life cycle • Regulations affecting 	4	2	6

Code	Sub-Module Units	Content	Time (Hrs)		
			Theory	Practice	Total
		<p>small businesses</p> <ul style="list-style-type: none"> • Business support services available for small businesses (incubation) • Legal forms of business ownership • Regulators that affect business incubators 			
5.1.10	Business Enterprise Management	<ul style="list-style-type: none"> • Definition of terms • Functions of management in an enterprise • Inventory management • Managing of the enterprise resources • Role play for management functions 	2	2	4
5.1.11	Financial Management	<ul style="list-style-type: none"> • Meaning of financial management • Importance of financial management • Sources of business finance • Types of business records • Recording business transactions in the books of accounts • Preparation of financial statements • Interpretation of financial statement • Importance of budgeting to a business • Business games in financial management Cases that require different sources of finance 	4	2	6

Code	Sub-Module Units	Content	Time (Hrs)		
			Theory	Practice	Total
5.1.12	Marketing	<ul style="list-style-type: none"> • Definition of terms • Components of marketing • Describe the process of marketing 	2	2	4
5.1.13	Enterprise Social Responsibility and Business ethics	<ul style="list-style-type: none"> • Definition of terms • Enterprise social responsibility • Types of enterprise • Importance of enterprise responsibility • Ethical behaviour of an enterprise • Ethical business practices • Effects of business on locality 	2	2	4
5.1.14	Business Plan	<ul style="list-style-type: none"> • Definition of a business plan • Components of a business plan • Uses of a business plan • Preparation of a business plan • Discussion of individual business plans 	3	3	6
5.1.15	Information Communication Technology	<ul style="list-style-type: none"> • Definition of terms in ICT in a small enterprise • Uses of ICT equipment • Benefits of ICT for a small business • Benefits and challenges of ICT in business enterprises 	2	2	4
5.1.16	Emerging Issues and Trends	<ul style="list-style-type: none"> • Definition of terms • Emerging issues and trends in entrepreneurship 	2	2	4
Total			37	29	66

5.1.01 INTRODUCTION TO ENTREPRENEURSHIP

5.1.01T1 Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) define various terms used in entrepreneurship
- b) explain the differences between self and salaried employment
- c) explain the contribution of entrepreneurship towards national development

5.1.01C Competence

The trainee should have the ability to:

- i) Distinguish between self and salaried employment
- ii) Explain the meaning of terms used in entrepreneurship
- iii) Explain contributions of entrepreneurship in national development

Content

- 5.1.01T1 Terms used in entrepreneurship
- 5.1.01T2 Difference between self employment and salaried employment
- 5.1.01T3 Contribution of entrepreneurship to national development

Practice

5.1.01P0 Specific Objectives

By the end of the sub-module unit, the trainee

should be able to discuss the advantages and disadvantages of self employment and salaried employment

Content

- 5.1.01P1 Advantages and disadvantages of self salaried employment

Suggested Teaching and Learning Activities

- Group discussion
- Interactive lecture

Suggested Teaching and Learning Resources

- Textbooks
- Newspaper cutting(s)
- Training manual

Suggested Assessment Methods

- Questions and answers
- Written tests

5.1.02 EVOLUTION OF ENTREPRENEURSHIP

Theory

5.1.02T0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) describe the history of entrepreneurship
- b) describe the myths associated with entrepreneurship
- c) explain the theories of entrepreneurship
- d) explain the importance of these theories

- e) Explain business environmental, political and social factors affecting entrepreneurial development

5.1.02C Competence

The trainee should have the ability to:

- i) Relate entrepreneurial theories in day to day running of a business
- ii) Discuss business environmental factors affecting the entrepreneurship development

Content

- 5.1.02T1 History of entrepreneurship globally and in Kenya
- 5.1.02T2 Myths associated with entrepreneurship in Kenya.
- 5.1.02T3 Theories of entrepreneurship
- 5.1.02T4 Importance of entrepreneurship theories
- 5.1.02T5 Entrepreneurial environment

Practice

- 5.1.02P0 *Specific Objectives*
- By the end of the sub-module unit, the trainee should be able to:
- a) discuss the myths associated with entrepreneurship in Kenya
 - b) trace entrepreneurial development in Kenya

Content

- 5.1.02P1 Myths associated with entrepreneurship in Kenya i.e., entrepreneurial development in Kenya

Suggested Teaching and Learning Activities

- Group discussion
- Case studies
- Interactive lecture
- Interviews

Suggested Teaching and Learning Resources

- Textbooks
- Newspaper cutting(s)
- Resource persons
- Role models

Suggested Assessment Methods

- Questions and answers
- Class presentation
- Observation
- Written tests

5.1.03 THE ENTREPRENEUR

5.1.03T0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) describe types of entrepreneurs
- b) describe the qualities of an entrepreneur
- c) explain the role of an entrepreneur in an enterprise

5.1.03C Competence

The trainee should have the ability to:

i) Recognize types of entrepreneurs in society.		<i>Suggested Assessment Methods</i>
ii) Outline the qualities of an entrepreneur		- Questions and answers - Class presentation - Written tests
iii) Appreciate the roles of an entrepreneur in a business	5.1.04	CREATIVITY AND INNOVATION
	5.1.04T0	<i>Specific Objectives</i>
		By the end of the sub-module unit, the trainee should be able to:
	a)	Define terms creativity innovation invention and discovery
	b)	Explain the processes creativity and innovation
	c)	Discuss the importance of creativity and innovation
	d)	Explain barriers to creativity and innovation
	e)	Explain ways of managing barriers to creativity and innovation
<i>Content</i>		
5.1.03T1 Types of entrepreneurs		
5.1.03T2 Qualities of an entrepreneur		
5.1.03T3 Roles of an entrepreneur in an enterprise		
<i>Practice</i>		
5.1.03P0 <i>Specific Objectives</i>		
By the end of the sub-module unit, the trainee should be able to relate entrepreneurial types and qualities to the existing entrepreneurs		
<i>Content</i>		
5.1.03P1 Relate entrepreneurial types and qualities to existing entrepreneurs	5.1.04C	Competence
		The trainee should have the ability to add value to goods or services used through creativity and innovation.
<i>Suggested Teaching and Learning Activities</i>		
- Group discussion		
- Case studies		
- Interactive lecture		
<i>Suggested Teaching and Learning Resources</i>		
- Textbooks	5.1.04T1	Meaning of creativity and innovation
- Newspaper cutting(s)	5.1.04T2	Process of creativity and innovation
- Resource persons	5.1.04T1	Importance of creativity and innovations
	5.1.04T1	Barriers to creativity and innovation

5.1.04T1 Managing barriers to creativity and innovation

Practice

5.1.04P0 *Specific Objectives*

By the end of the sub-module unit, the trainee should be able to:

- a) Discuss ways of improving a given product or service
- b) Identify a product and discuss different ways in which it can be used

Content

5.1.04P1 Ways of improving a given product or service

5.1.04P2 Identification of a product and the ways it can be used

Suggested Teaching and Learning Activities

- Group discussion
- Case studies
- Interactive Lecture

Suggested Teaching and Learning Resources

- Textbooks
- Newspaper cuttings

Suggested Assessment Methods

- Questions and answers
- Class presentation
- Observation

5.1.05 ENTREPRENEURIAL CULTURE

5.1.05T0 *Specific Objectives*

By the end of the sub-module unit, the trainee should be able to:

- a) Explain the concept of entrepreneurial culture
- b) Discuss habits that promote entrepreneurial development
- c) Discuss factors inhibiting entrepreneurial development
- d) Discuss ways of managing factors that inhibit development of entrepreneurial culture

Competence

The trainee should have the ability to:

- i) Identify habits that promote entrepreneurial culture
- ii) Identify factors that inhibit entrepreneurial culture
- iii) Manage factors that inhibit the development of entrepreneurial culture

Content

5.1.05T1 Concept of entrepreneurial culture

5.1.05T2 Habits that promote entrepreneurial development

5.1.05T3 Factors inhibiting entrepreneurial development

5.1.05T4 Ways of managing factors that inhibit development of entrepreneurial culture

Practice

5.1.05P0 *Specific Objectives*

By the end of the sub-module unit, the trainee should be able to discuss factors that promote or inhibit entrepreneurial culture

Content

5.1.05P1 Factors that promote or inhibit entrepreneurial culture

Suggested Teaching and Learning Activities

- Group discussion
- Case studies
- Interactive lecture
- Field visits
- Interviews

Suggested Teaching and Learning Resources

- Textbooks
- Newspaper cutting(s)
- Resource persons
- Role models

Suggested Assessment Methods

- Questions and answers
- Class presentation
- Observation
- Written tests

5.1.06 ENTREPRENEURIAL OPPORTUNITIES

5.1.06T0 *Specific Objectives*

By the end of the sub-module unit, the trainee should be able to:

- a) Explain the meaning of business opportunity
- b) Explain ways of generating ideas for business opportunities
- c) Evaluate business opportunities

Competence

The trainee should have the ability to:

- i) Generate business ideas
- ii) Identify business opportunities
- iii) Choose viable business opportunities

Content

5.1.06T1 Meaning of business opportunity

5.1.06T2 Ways of generating business ideas

5.1.06T3 Evaluation of business opportunities for viability

Practice

5.1.06P0 *Specific Objectives*

By the end of the sub-module unit, the trainee should be able to brainstorm in class to come up with business ideas and evaluate them for viability

	<i>Content</i> 5.1.06P1 Brainstorming for business ideas and evaluation for their viability	<i>Content</i> 5.1.07T1 Definition of terms 5.1.07T2 Entrepreneurial motivation factors
	<i>Suggested Teaching and Learning Activities</i> <ul style="list-style-type: none">- Group discussion- Case studies- Interactive lecture- Interviews<ul style="list-style-type: none">o Recordedo Physical	Practice <i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: <ul style="list-style-type: none">a) discuss among themselves motivational factors that have contributed to successful entrepreneursb) discuss motivational factors that may lead them to venture into business
	<i>Suggested Teaching and Learning Resources</i> <ul style="list-style-type: none">- Textbooks- Newspaper cutting(s)- Role models	
	<i>Suggested Assessment Methods</i> <ul style="list-style-type: none">- Questions and answers- Class presentation- Observation- Written tests	
5.1.07 ENTREPRENEURIAL MOTIVATION		<i>Content</i> 5.1.07P1 Motivational factors that contribute to successful entrepreneurs 5.1.07P2 Motivational factors that lead to venturing into business
	<i>5.1.07T0 Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: <ul style="list-style-type: none">a) define entrepreneurial motivationb) identify entrepreneurial motivation factors	<i>Suggested Teaching and Learning Activities</i> <ul style="list-style-type: none">- Group discussion- Case studies- Interactive lecture- Interviews
	5.1.07C Competence The trainee should have the ability to identify internal and external motivation factors	<i>Suggested Teaching and Learning Resources</i> <ul style="list-style-type: none">- Textbooks- Newspaper cutting(s)- Resource persons- Role models

	<i>Suggested Assessment Methods</i>	<i>Content</i>
	<ul style="list-style-type: none"> - Questions an answers - Class presentation - Written tests 	5.1.08P1 Competences observed among themselves during the field visit
5.1.08 ENTREPRENEURIAL COMPETENCES		<i>Suggested Teaching and Learning Activities</i>
5.1.08T0 <i>Specific Objectives</i>	By the end of the sub-module unit, the trainee should be able to:	
	<ul style="list-style-type: none"> a) define entrepreneurial competence in business b) explain key entrepreneurial competences in business 	<i>Suggested Learning Resources</i>
5.1.08C Competence	The trainee should have the ability to apply key entrepreneurial competences in business	<ul style="list-style-type: none"> - Textbooks - Newspaper cutting(s) - Resource persons - Role models
	<i>Content</i>	<i>Suggested Assessment Methods</i>
5.1.08T1 Definition of entrepreneurial competences		<ul style="list-style-type: none"> - Questions an answers - Class presentation - Observation - Written tests
5.1.08T2 Key entrepreneurial competences		
	Practice	5.1.09 STARTING A SMALL BUSINESS
5.1.08P0 <i>Specific Objectives</i>	By the end of the sub-module unit, the trainee should be able to discuss competences observed among themselves during the field visit	5.1.09T0 <i>Specific Objectives</i>
		By the end of the sub-module unit, the trainee should be able to:
		<ul style="list-style-type: none"> a) describe the procedure of starting a small enterprise b) explain the factors to be considered when starting a small enterprise c) describe different legal forms of business ownership

- d) explain challenges that are faced when starting a small business
- e) describe business life cycle
- f) outline regulations affecting business
- g) discuss business support services available to small business

5.1.09C Competence

The trainee should have the ability to:

- i) Identify procedures of starting a small enterprise
- ii) Select the factors considered when starting a business
- iii) Choose appropriate forms of business ownership
- iv) Identify regulations affecting small businesses
- v) Effectively assess and use business incubation services to start and develop their businesses

Content

- 5.1.09T1 Procedure of starting a small enterprise
- 5.1.09T2 Factors to be considered when starting a small enterprise
- 5.1.09T3 Legal Forms of business ownership
 - sole proprietorship
 - partnership
 - companies
 - co-operative societies

- 5.1.09T4 Challenges faced when starting a small enterprise
- 5.1.09T5 Business life cycle
- 5.1.09T6 Regulations affecting small businesses
- 5.1.09T7 Business support services available for small businesses (incubation)

Practice

5.1.09P0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to:-

- a) choose appropriate legal forms of business ownership for their identified businesses
- b) identify relevant regulations that affect business
- c) discuss benefits derived from business incubators

Content

- 5.1.09P1 Legal forms of business ownership

- 5.1.09P1 Regulators that affect business incubators

Suggested Teaching and Learning Activities

- Group discussion
- Case studies
- Interactive lecture
- Field visits
- Interview

Suggested Teaching and Learning Resources

- Textbooks
- Newspaper cutting(s)
- Resource persons
- Role models

	<i>Suggested Assessment Methods</i>	5.1.10T4 Managing of the enterprise resources
	<ul style="list-style-type: none"> - Questions an answers - Class presentation - Written tests 	Practice
5.1.10 BUSINESS ENTERPRISE MANAGEMENT		5.1.10P0 <i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to role play management functions
5.1.10T0 <i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to:		<i>Content</i>
<ul style="list-style-type: none"> a) Define the term management b) Explain the functions management in an enterprise c) Explain the methods of inventory management d) Explain the various methods of managing business resources 	5.1.10P1 Role play for management functions	<i>Suggested Teaching and Learning Activities</i>
		<ul style="list-style-type: none"> - Group discussion - Case studies - Interactive lecture - Field visits - Interview
5.1.10C Competence	The trainee should have the ability to:	<i>Suggested Teaching and Learning Resources</i>
<ul style="list-style-type: none"> i) Manage business resources ii) Role play functions of enterprise management iii) Procure enterprise resources iv) Manage inventories in business 		<ul style="list-style-type: none"> - Textbooks - Newspaper cutting(s) - Resource persons - Role models
		<i>Suggested Assessment Methods</i>
		<ul style="list-style-type: none"> - Questions an answers - Class presentation - Observation - Written tests

5.1.11 FINANCIAL MANAGEMENT

	<i>Content</i>	5.1.11T0 <i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to:
5.1.10T1 Definition of terms		<ul style="list-style-type: none"> a) explain the meaning of financial management
5.1.10T2 Functions of management in an enterprise		
5.1.10T3 Inventory management		

- b) explain the importance of financial management
- c) identify the various sources of business finance
- d) identify types of business records
- e) record business transactions in the books of accounts
- f) prepare financial statements
- g) interpret financial statement for business decisions
- h) explain the importance of budgeting to a business

5.1.11C Competence

The trainee should have the ability to:

- i) Record business transactions in book of account
- ii) Prepare financial statements
- iii) Prepare budgets for business
- iv) Interpret financial statements

Content

- 5.1.11T1 Meaning of financial management
- 5.1.11T2 Importance of financial management
- 5.1.11T3 Sources of business finance
- 5.1.11T4 Types of business records
- 5.1.11T5 Recording business transactions in the books of accounts
- 5.1.11T1 Preparation of financial statements

5.1.11T1 Interpretation of financial statement

5.1.11T1 Importance of budgeting to a business

Practice

5.1.11T0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) Carry out a business game in financial management
- b) Discuss cases that require different sources of finance

Content

5.1.11P1 Business games in financial management

5.1.11P1 Cases that require different sources of finance

Suggested Teaching and Learning Activities

- Group discussion
- Case studies
- Interactive lecture
- Field visits
- Interview

Suggested Teaching and Learning Resources

- Textbooks
- Newspaper cutting(s)
- Resource persons
- Role models

Suggested Assessment Methods

- Questions and answers
- Class presentation
- Observation
- Written tests

5.1.12 MARKETING

5.1.12T0 *Specific Objectives*

By the end of the sub-module unit, the trainee should be able to:

- a) Define terms market and marketing
- b) Explain the components of marketing
- c) Describe the process of marketing

- Interactive lecture
- Interview

Suggested Teaching and Learning Resources

- Textbooks
- Newspaper cutting(s)
- Resource persons
- Role models

Suggested Assessment Methods

- Questions and answers
- Written tests

5.1.12C Competence

The trainee should have the ability to:

- i) Apply components of marketing situation
- ii) Gather market information for product/service

Content

- 5.1.12T1 Definition of terms
- 5.1.12T2 Components of marketing
- 5.1.12T3 Describe the process of marketing

Practice

5.1.11T0 *Specific Objective*

By the end of the sub-module unit, the trainee should be able to discuss the component of marketing in relation to a given product or service.

Content

- 5.1.12P1 Components of marketing for a product or service

Suggested Teaching and Learning Activities

- Group discussion

5.1.13 ENTERPRISE SOCIAL RESPONSIBILITIES AND BUSINESS ETHICS

5.1.13T0 *Specific Objectives*

By the end of the sub-module, the trainee should be able to:

- a) define terms social responsibilities and business ethics
- b) explain the meaning of enterprise social responsibility
- c) identify types of enterprise social responsibility
- d) explain the importance of enterprise social responsibility
- e) explain ethical behaviour in a business enterprise

5.1.23C Competence

The trainee should have the ability to:

- i) Demonstrate social responsibility in a enterprise

- ii) Explain the importance of enterprise social responsibility
- iii) Portray ethical behavior an enterprise

Content

- 5.1.13T1 Definition of terms
- 5.1.13T2 Enterprise social responsibility
- 5.1.13T3 Types of enterprise
- 5.1.13T4 Importance of enterprise responsibility
- 5.1.13T5 Ethical behaviour of an enterprise

Practice

5.1.13P0 *Specific Objectives*

By the end of the sub-module unit, the trainee should be able to:

- a) discuss an ethical business practice you have experienced
- b) discuss how a business enterprise can affect your locality

Content

- 5.1.13P1 Ethical business practices
- 5.1.13P2 Effects of business on locality

Suggested Teaching/ Learning Activities

- Group discussion
- Case studies
- Interactive lecture
- Field visits
- Interview

Suggested Teaching/ Learning Resources

- Textbooks
- Newspaper cutting(s)
- Resource persons
- Role models

Suggested Assessment Methods

- Questions an answers
- Class presentation
- observation
- Written tests

5.1.14 BUSINESS PLAN

5.1.14T0 *Specific Objectives*

By the end of the sub-module, the trainee should be able to:

- a) define a business plan
- b) describe the components of a business plan
- c) explain the uses of a business plan
- d) prepare a business plan

5.1.14C Competence

The trainee should have the ability to prepare a business plan.

Content

- 5.1.14T1 Definition of a business plan
- 5.1.14T2 Components of a business plan
- 5.1.14T3 Uses of a business plan
- 5.1.14T4 Preparation of a business plan

	Practice	
5.1.14P0	<i>Specific Objective</i> By the end of the sub-module unit, the trainee should be able to present and discuss individual business plans <i>Content</i>	a) define terms information, communication and technology b) explain the benefits of ICT in a small enterprise c) identify uses of ICT equipment in business enterprise
5.1.14P1	Discussion of individual business plans	
	<i>Suggested Teaching and Learning Activities</i>	
	- Group discussions - Case studies - Interactive lectures - Field visits - Interview - Practical activity - Project	
	<i>Suggested Teaching and Learning Resources</i>	
	- Textbooks - Newspaper cutting(s) - Resource persons - Role models	
	<i>Suggested Assessment Methods</i>	
	- Questions and answers - Class presentation - observation - Written tests	
5.1.15	INFORMATION COMMUNICATION TECHNOLOGY	
5.1.15T0	<i>Specific Objectives</i> By the end of the sub-module, the trainee should be able to:	
5.1.15C	Competence The trainee should have the ability to use relevant ICT facilities in managing a small business <i>Content</i>	
5.1.15T1	Definition of terms in ICT in a small enterprise	
5.1.15T1	Benefits of ICT for a small business	
5.1.15T1	Uses of ICT equipment	
	Practice	
5.1.15P0	<i>Specific Objective</i> By the end of the sub-module unit, the trainee should be able to discuss the benefits and of challenges ICT in business enterprise. <i>Content</i>	
5.1.15P1	Benefits and challenges of ICT in business enterprises	
5.1.16	EMERGING ISSUES AND TRENDS IN ENTREPRENEURSHIP	
5.1.16T0	<i>Specific Objectives</i> By the end of the sub-module, the trainee should be able to:	

- a) define terms issues and trends
- b) identify the emerging issues and trends in entrepreneurship
- c) discuss the challenges posed by the emerging issues and trends in entrepreneurship
- d) discuss ways of managing challenges posed by emerging issues and trends in entrepreneurship

entrepreneurship development

Suggested Teaching and Learning Activities

- Group discussion
- Case studies
- Interactive lecture
- Interview
 - o recorded
 - o live

Suggested Teaching and Learning Resources

- Textbooks
- Internet
- Newspaper cutting(s)
- Resource persons

Suggested Assessment Methods

- Questions and answers
- Written tests

5.1.16C Competence

Ability to cope with challenges posed by emerging trends and issues in enterprise management

Content

- 5.1.16T1 Definition of terms
- 5.1.16T2 Emerging issues and trends in entrepreneurship
- 5.1.16T3 Challenges posed by emerging trends and issues in enterprise management
- 5.1.16T4 Management of challenges posed by emerging issues and trends in enterprise management

Practice

5.1.16P0 Specific Objective

By the end of the sub-module, the trainee should be able to discuss impact of emerging issues and trends in entrepreneurship development

Content

- 5.1.12P1 Impact of emerging issues and trends in

6.1.0 INTRODUCTION TO ICT

6.1.1 Introduction

This module unit is designed to introduce the trainee to Information Communication Technology, equipping him/her with the necessary knowledge, skills and attitudes to enable him/her professionally work with ICT facilities.

6.1.2 General Objectives

By the end of this module unit, the trainee should be able to:

- a) show understanding of ICT concepts
- b) show understanding of ICT hardware and software
- c) develop attitudes towards safe use of computers
- d) apply networking concepts
- e) appreciate the role of ICT in the society
- f) recognise the emerging issues in ICT

6.1.3 Module Unit Summary and Time Allocation

Code	Sub-module Unit	Content	Total (Hrs)		
			Theory	Practice	Total
6.1.01	Computer fundamentals	<ul style="list-style-type: none">• Terms related to computers• Evolution of computers• Classification of computers• Benefits and challenges in the use of computers• Uses of computers	10	4	14
6.1.02	Computer Hardware	<ul style="list-style-type: none">• Computer input devices• The CPU• Computer storage media• Output devices• Computer hardware selection process	25	8	33
6.1.03	Computer software	<ul style="list-style-type: none">• Meaning and importance• Classification• Factors determining software selection	19	8	27
6.1.04	Computer Safety and	<ul style="list-style-type: none">• Computer safety• Computer ergonomics	10	4	14

Code	Sub-module Unit	Content	Total (Hrs)		
			Theory	Practice	Total
	Ergonomics	<ul style="list-style-type: none"> Importance of computer safety and ergonomics 			
6.1.05	Introduction to Computer Networking	<ul style="list-style-type: none"> Computer network Benefits Type Topologies Network cables 	18	12	30
6.1.06	Data Processing	<ul style="list-style-type: none"> Definition Data hierarchy Data processing cycle Data processing methods Data processing modes Computer files 	13	4	17
6.1.07	Impact of ICT in the Society	<ul style="list-style-type: none"> Impact of ICT in society 	10	0	10
6.1.08	Ethics and professional issues	<ul style="list-style-type: none"> Ethical issues in ICT Professional issues relating to computing Legal aspects of computer crime Piracy and intellectual property rights 	6	4	10
6.1.09	Emerging Trends In ICT	<ul style="list-style-type: none"> Identification Challenges Coping 	8	0	8
Total			119	44	163

6.1.01	COMPUTER FUNDAMENTALS	6.1.01T5	Benefits and challenges in the use of computers
	Theory	6.1.01T6	Uses of computer
6.1.01T	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) define terms related to computers. b) outline the evolution of computers. c) describe the classification of computers d) explain the uses of computers e) explain the benefits and challenges in the use of computers.	6.1.01P	Practice <i>Specific Objectives</i> By the end of the sub-module unit the trainee should be able to identify types of computers
6.1.01C	Competence The trainee should have the ability to classify computers	6.1.01P1	<i>Content</i> Types of Computers
6.1.01T1	<i>Content</i> Terminologies i) computer ii) ICT iii) IT iv) hardware v) software vi) live ware vii) Information viii) Data		<i>Suggested Teaching/Learning Activities</i> - Interactive lectures - Demonstration
6.1.01T2	Evolution of computers	6.1.02	<i>Suggested Teaching/Learning Resources</i> - Text books - Charts - Computer Hardware - Computer Software - Multi-media
6.1.01T3	Classification of computers by i) size ii) purpose iii) functionality iv) generation	6.1.02T	<i>Suggested Evaluation Methods</i> - Assignments - Practical test - Written test

	a) explain the functional organisation of a computer b) describe computer input devices c) describe the components of CPU d) describe computer storage media e) describe the output devices f) explain computer hardware selection process	6.1.02P	Practice <i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) identify computer hardware devices b) select a computer hardware c) connect computer peripheral devices
6.1.02C Competence	The trainee should have the ability to: i) identify computer hardware ii) select computer hardware iii) connect computer peripheral devices iv) install computer software	6.1.02P1 6.1.02P2 6.1.02P3	Content Components of computer hardware Computer hardware selection Peripheral devices
			Suggested Teaching/Learning Activities - Interactive lectures - Demonstrations - Case study - Computer practical
6.1.02T1	Content Functional organisation of a computer		Suggested Teaching/Learning Resources - Text books - Charts - Computer Hardware - Computer Software - Multi-media - Internet
6.1.02T2	Input devices i) input devices		
6.1.02T3	Components of CPU		
6.1.02T4	Storage devices and media i) primary ii) secondary		
6.1.02T5	Output devices		
6.1.02T6	Computer hardware selection		

6.1.03 COMPUTER SOFTWARE

Theory

- 6.1.03T *Specific Objectives*
By the end of the sub-module unit, the trainee should be able to:
- a) explain the meaning and importance of computer software
 - b) describe classification of computer software
 - c) describe factors determining software selection

6.1.03C Competence

The trainee should have the ability to:

- i) Select Computer Software
- ii) Install Computer Software

Content

- 6.1.03T1 Meaning and importance of computer software
- 6.1.03T2 Classification of software
 - i) system software
 - ii) application software
- 6.1.03T3 Software selection

Practice

- 6.1.03P *Specific Objectives*
By the end of the sub-module unit, the trainee should be able to:
- a) select computer software
 - b) install computer software

- Content*
- 6.1.03P1 Software selection
 - 6.1.03P2 Software installation

Suggested Teaching/Learning Activities

- Interactive lectures
- Demonstrations
- Case study
- Computer practical

Suggested Teaching/Learning Resources

- Text books
- Charts
- Computer Hardware
- Computer Software
- Multimedia
- Internet

Suggested Evaluation Methods

- Assignments
- Practical test
- Written test

6.1.04 COMPUTER SAFETY AND ERGONOMICS

Theory

- 6.1.04T *Specific Objectives*
By the end of the sub-module unit, the trainee should be able to:
- a) explain computer safety
 - b) explain computer ergonomics
 - c) outline the importance of computer safety and ergonomics

6.1.04C	Competence The trainee should have the ability to: i) safely use a computer ii) apply computer ergonomics	<i>Suggested Teaching/Learning Resources</i> - Textbooks - Charts - Computer Hardware - Computer Software - Multimedia - Internet - Dust covers - Uninterruptible power Supply (UPS) - Power surge protectors - Circuit breakers - Antivirus software
	<i>Content</i>	
6.1.04T1	Computer Safety i) Hardware ii) Software iii) Data	
6.1.04T2	Computer ergonomics	
6.1.04T3	Importance of computer safety and ergonomics	
	Practice	
6.1.04P	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) apply computer safety measures b) apply computer ergonomics	<i>Suggested Evaluation Methods</i> - Assignments - Practical test - Written test
		6.1.05 INTRODUCTION TO COMPUTER NETWORKING
	<i>Content</i>	Theory
6.1.04P1	Computer safety measures i) hardware ii) software iii) data	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) define Computer Network b) explain the benefits of computer networking c) explain types of computer networks d) describe network topologies e) outline transmission media
6.1.04P2	Computer ergonomics	
	<i>Suggested Teaching/Learning Activities</i> - Interactive lectures - Computer practical - Demonstration	

		<i>Suggested Teaching/Learning Resources</i>
6.1.05C Competence	The trainee should have the ability to: i) identify computer networks ii) identify computer topologies iii) terminate network cables	- Text books - Charts - Computer Hardware - Computer Software - Internet - Crimping tool - Punch downs - Cable tester - RJ45 - Cables - RJ45 modules
	<i>Content</i>	
6.1.05T1	Computer Network	
6.1.05T2	Benefits of computer networking	
6.1.05T3	Types of Networks	
6.1.05T4	Network topologies	
6.1.05T5	Transmission media	
	<i>Practice</i>	
6.1.04P	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to connect network cables.	
6.1.04P1	<i>Content</i> Connect network cables - terminating - module punch-down	
	<i>Suggested Teaching/Learning Activities</i>	
	- Interactive lectures - Computer practical - Discussion - Demonstration - Field trip	
	6.1.06C Competence	<i>Suggested Teaching/Learning Resources</i>
	The trainee should have the ability to:	
		<i>Suggested Evaluation Methods</i>
		- Assignments - Practical test - Written test
		DATA PROCESSING
		<i>Theory</i>
		<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) define Data Processing b) describe the data processing cycle c) outline the data hierarchy d) explain data processing methods e) describe data processing modes f) describe computer files
	6.1.06T	

	i) process data ii) organize files	<i>Suggested Evaluation Methods</i> - Assignments - Written test
	<i>Content</i>	
6.1.06T1	Definition of data processing	6.1.07 IMPACT OF ICT IN THE SOCIETY
6.1.06T2	Data processing cycle	<i>Theory</i>
6.1.06T3	Data hierarchy	
6.1.06T4	Data processing methods	
6.1.06T5	Data processing modes	
6.1.06T6	Computer files i) file types ii) file organisation iii) file access iv) file activities	6.1.07T <i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to discuss the impact of ICT in society
	Practice	6.1.07C Competence The trainee should have the ability to appreciate the impact of ICT in society
6.1.06P	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to apply data processing methods	
	<i>Content</i>	6.1.07T1 <i>Content</i> Impact of ICT i) applications areas ii) positive impact iii) negative impact
6.1.06P1	Files storage media	
	<i>Suggested Teaching/Learning Activities</i>	<i>Suggested Teaching/Learning Activities</i>
	- Interactive lectures - Discussion - Demonstration - Field trip	- Interactive lecture - Research work - Field trip - Discussion - Presentations
	<i>Suggested Teaching/Learning Resources</i>	<i>Suggested Teaching/Learning Resources</i>
	- Textbooks - Storage media - Computer system - Resource persons	- Internet - Textbooks - Journals

<i>Suggested Evaluation Methods</i>		Practice
- Written tests	6.1.08P0	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to:
- Assignments		a) identify indicators of piracy
- Project work		b) identify indicators of plagiarism
6.1.08 ETHICS AND PROFESSIONAL ISSUES		
Theory		
6.1.08T Specific Objectives		<i>Content</i>
By the end of the sub-module unit, the trainee should be able to:	6.1.06P1	Piracy
a) discuss ethical issues in ICT	6.1.06P2	Plagiarism
b) describe professional issues relating to computing		
c) explain legal aspects of computer crime		
d) explain piracy and intellectual property rights		
6.1.08C Competence		<i>Suggested Teaching/Learning Activities</i>
The trainee should have the ability to:		- Interactive lecturers
i) comply with copy rights and intellectual property rights		- Discussion
ii) embrace the professional code of conduct		
iii) comply with ICT legislation and Policy	6.1.07	<i>Suggested Teaching/Learning Resources</i>
		- Textbooks
		- Internet
		- Whiteboard
		- Computer system
<i>Content</i>		<i>Suggested Evaluation Methods</i>
6.1.08T1 Ethical issues in ICT		- Assignments
6.1.08T2 Professional issues	6.1.07T	- Written test
6.1.08T3 Legal aspects of computer crime		
6.1.08T4 Piracy and intellectual property right		EMERGING TRENDS IN ICT
		Theory
		<i>Specific Objectives</i>
		By the end of the sub-module unit, the trainee should be able to:
		a) identify emerging trends in ICT

-
- b) describe the challenges and opportunities derived from emerging trends in ICT
 - c) cope with the emerging trends in ICT

6.1.07C Competence

The trainee should have the ability to cope with challenges of emerging trends in ICT

Content

- 6.1.07T1 Emerging trends in ICT
- 6.1.07T2 Challenges and Opportunities of emerging trends
- 6.1.07T3 Coping with the emerging trends in ICT

Suggested Teaching/Learning Activities

- Interactive lectures
- Discussion
- Case study

Suggested Teaching/Learning Resources

- A computer System
- Whiteboard
- Textbooks
- Internet
- Journal

Suggested Evaluation Methods

- Assignments
- Written test
- Projects

7.1.0 COMPUTER APPLICATIONS I

7.1.1 Introduction

This module unit is intended to equip the trainee with knowledge, skills and attitudes that will enable him/her operate and use computer application packages to perform tasks.

7.1.2 General Objectives

By the end of the module unit the trainee should be able to:

- a) understand the basic concepts of computer applications
- b) produce documents using word processor
- c) utilise spreadsheet packages
- d) use database packages
- e) apply presentation packages
- f) use the internet and e-mail services
- g) cope with emerging trends in computer applications

7.1.3 Module Unit Summary and Time Allocation

Code	Sub-module Unit	Content	Total (Hrs)		
			Theory	Practice	Total
7.1.01	Introduction To Computer Application	<ul style="list-style-type: none">• Define• Classification• Application areas	6	2	8
7.1.02	Introduction to operating system environment	<ul style="list-style-type: none">• Definition• Functions• Types• Mouse techniques• Keyboard layout	10	10	20
7.1.03	Word Processing	<ul style="list-style-type: none">• Word processing concepts• Document creation• Document editing• Document formatting• Document printing• Macros• Mail merge	10	32	42
7.1.04	Spreadsheet	<ul style="list-style-type: none">• Spreadsheet concepts• Worksheet creation• Worksheet editing• Worksheet formatting	16	22	38

Code	Sub-module Unit	Content	Total (Hrs)		
			Theory	Practice	Total
		<ul style="list-style-type: none"> • Cell referencing • Worksheet formulae and functions • Creating charts and graphs • Printing a workbook • Worksheet utilities • Macros 			
7.1.05	Database	<ul style="list-style-type: none"> • Database concepts • Database design • Database objects • Printing database objects 	14	18	32
7.1.06	Presentation Software	<ul style="list-style-type: none"> • Presentation software concepts • Slide layouts • Creating slides • Slide editing • Slide formatting • Slide shows • Printing • Packaging a presentation 	8	12	20
7.1.07	Internet and E-Mail	<ul style="list-style-type: none"> • Concepts of Internet • Internet services • E-mail • Impact of Internet to society • Internet security 	10	20	30
7.1.08	Emerging Trends in Computer Application	<ul style="list-style-type: none"> • Identification • Challenges • Coping 	5	3	8
Total			79	119	198

7.1.01 INTRODUCTION TO COMPUTER APPLICATION

Theory

7.1.01T0 Specific Objectives

By the end of this sub-module unit, the trainee should be able to:

- a) define computer software
- b) describe the classification of computer software
- c) state the applications of computer software

7.1.01C Competence

The trainee should have the ability to classify computer software

Content

- 7.1.01T1 Definition of computer software
- 7.1.01T2 Classification of computer software
- 7.1.01T3 Applications of computer software

Practice

7.1.01P0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to classify computer software

Content

- 7.1.01P1 Computer software

Suggested Teaching/Learning Activities

- Interactive lectures
- Demonstration
- Computer laboratory practical

Suggested Teaching/Learning Resources

- Textbooks
- Computer system

Suggested Evaluation Methods

- Assignment
- Computer laboratory practical
- Written test

7.1.02 INTRODUCTION TO OPERATING SYSTEM ENVIRONMENT

Theory

7.1.02T0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) define operating system
- b) outline the functions of operating system
- c) describe types of user interfaces
- d) explain mouse techniques
- e) explain keyboard layout

	7.1.02C Competence The trainee should have the ability to use operating systems	<i>Suggested Teaching/Learning Resources</i> - Textbooks - Computer system - Internet
	<i>Content</i>	
7.1.02T1	Definition of operating system	<i>Suggested Evaluation Methods</i>
7.1.02T2	Functions of operating system	- Assessment
7.1.02T3	User interfaces i) menu driven ii) command driven iii) graphical user interface	- Written tests
7.1.02T4	Mouse techniques	- Practical test
7.1.02T5	Keyboard layout	
	Practice	7.1.03 WORD PROCESSING
7.1.02P0	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to a) use command-based operating system b) use window-based operating system	Theory
7.1.02P1	<i>Content</i> Command-based operating system	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) explain word processing concepts b) describe document creation c) describe document editing d) describe document formatting e) describe macros f) describe mail merge g) describe document printing
7.1.02P2	Window-based operating system	
	<i>Suggested Teaching/Learning Activities</i> - Interactive lectures - Demonstration - Computer laboratory practical	7.1.03C Competence The trainee should have the ability to produce documents using word processor
		<i>Content</i>
7.1.03T1	Word processing concepts i) definition of word processing	

	ii) examples of word processing programs	7.1.03P1	f) merge documents
	iii)advantages and disadvantages of word processing		<i>Content</i>
7.1.03T2	Document creation		Document creation
	i) loading word processing program		i) loading word processing program
	ii) page layout		ii) page layout
	iii)create documents using templates and wizards		iii)create documents using templates and wizards
	iv)tables	7.1.03P2	iv)tables
	v) objects		v) objects
	vi)saving		vi)saving
7.1.03T3	Document editing		7.1.03P2 Document editing
	i) search and replace		i) search and replace
	ii) spell checking		ii) spell checking
	iii)move and copy		iii)move and copy
	iv)thesaurus		iv)thesaurus
	v) auto correct		v) auto correct
	vi)auto complete		vi)auto complete
7.1.03T4	Document formatting	7.1.03P3	7.1.03P3 Document formatting
	i) character		i) character
	ii) paragraph		ii) paragraph
	iii)page		iii)page
	iv)document		iv)document
7.1.03T5	Printing	7.1.03P4	7.1.03P4 Macros
7.1.03T6	Macros	7.1.03P5	7.1.03P5 Mail merge
7.1.03T7	Mail merge	7.1.03P4	7.1.03P4 Printing
		7.1.03P5	7.1.03P5 Macros
		7.1.03P6	7.1.03P6 Mail merge

Practice

- 7.1.03P0 *Specific Objectives*
 By the end of the sub-module unit, the trainee should be able to:
- a) create a word document
 - b) edit a document
 - c) format a document
 - d) print a document
 - e) create macros

Suggested

Teaching/Learning

Activities

- Interactive lectures
- Demonstration
- Computer laboratory practical

Suggested

Teaching/Learning

Resources

- Multimedia Projector
- Textbooks
- Computer system

- Word processing application
- Typing tutor

Suggested Evaluation Methods

- Assignments
- Practical tests
- Written tests

7.1.04 SPREADSHEET

Theory

7.1.04T0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) explain spreadsheet concepts
- b) describe worksheet creation
- c) describe worksheet editing
- d) describe worksheet formatting
- e) explain cell referencing
- f) explain worksheet formulae and functions
- g) describe the procedure of creating charts and graphs
- h) describe procedure of printing a workbook
- i) describe worksheet utilities
- j) describe macros

7.1.04C Competence

The trainee should have the ability to use a spreadsheet program

7.1.04T1

Content

Spreadsheet concepts

- i) definition of a spreadsheet
- ii) advantages and disadvantages
- iii) application areas
- iv) worksheets and workbooks
- v) cell
- vi) cell range
- vii) worksheet data

Worksheet creation

- i) load spreadsheet program
- ii) page layout
- iii) entering data
- iv) importing and exporting data
- v) saving a workbook

Worksheet editing

- i) move and copy
- ii) search and replace
- iii) delete cells, row and column contents

Worksheet formatting

- i) cell formatting
- ii) auto formatting
- iii) format painter
- iv) conditional formatting
- v) column width and height
- vi) hide/unhide row, column and sheet
- vii) freezing and unfreezing columns and sheet

7.1.04T5

Cell referencing

- i) absolute
- ii) relative
- iii) mixed
- iv) 3D reference

7.1.04T6

Formulae and functions

- | | |
|---|--|
| <p>7.1.04T7 Charts and Graphs</p> <ul style="list-style-type: none"> i) data ranges ii) charts and graph types iii) chart elements iv) inserting charts | <p>v) saving a workbook</p> |
| <p>7.1.04T8 Worksheet utilities</p> <ul style="list-style-type: none"> i) sorting ii) filtering iii) consolidation iv) sub-total | <p>7.1.04P2 Worksheet editing</p> <ul style="list-style-type: none"> i) move and copy ii) search and replace iii) delete cells, row and column contents |
| <p>7.1.04T9 Macros</p> | <p>7.1.04P3 Worksheet formatting</p> <ul style="list-style-type: none"> i) cell formatting ii) auto formatting iii) format painter iv) conditional formatting v) column width and height vi) hide/unhide row, column and sheet vii) freezing and unfreezing columns and sheet |
| <p>7.1.04T10 Workbook printing</p> <ul style="list-style-type: none"> i) set print area ii) page setup iii) print setup | |

Practice

- 7.1.04P0 *Specific Objectives*
 By the end of the sub-module unit, the trainee should be able to:
- a) create worksheets
 - b) edit worksheets
 - c) format worksheets
 - d) reference cells
 - e) apply formulae and functions
 - f) create charts and graphs
 - g) create and run macros
 - h) use worksheet utilities
 - i) print a workbook

Content

- 7.1.04P1 Worksheet creation
- i) load spreadsheet program
 - ii) page layout
 - iii) entering data
 - iv) importing and exporting data

- | |
|---|
| <p>7.1.04P4 Cell referencing</p> <ul style="list-style-type: none"> i) absolute ii) relative iii) mixed iv) 3D reference |
| <p>7.1.04P5 Formulae and functions</p> |
| <p>7.1.04P6 Charts and Graphs</p> <ul style="list-style-type: none"> i) data ranges ii) charts and graph types iii) chart elements iv) inserting charts |
| <p>7.1.04P7 Worksheet utilities</p> <ul style="list-style-type: none"> i) sorting ii) filtering iii) consolidation iv) sub-total |
| <p>7.1.04P9 Macros</p> |
| <p>7.1.04P8 Workbook printing</p> <ul style="list-style-type: none"> i) set print area ii) page setup iii) print setup |

	<i>Suggested Teaching/Learning Activities</i>		<i>Content</i>
	<ul style="list-style-type: none"> - Interactive lectures - Demonstrations - Computer laboratory practice 	7.1.05T1	<ul style="list-style-type: none"> Database concepts i) definition ii) advantages and disadvantages iii) database models
		7.1.05T2	<ul style="list-style-type: none"> Database design concepts i) entity integrity ii) referential integrity iii) relationships
	<i>Suggested Teaching/Learning Resources</i>	7.1.05T3	<ul style="list-style-type: none"> Database objects i) tables ii) queries iii) forms iv) reports v) macros
	<i>Suggested Evaluation Methods</i>	7.1.05T4	Printing of objects
	<ul style="list-style-type: none"> - Assignments - Practical tests - Written tests 		Practice
7.1.05	DATABASE		
	Theory		
7.1.05T0	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to:	7.1.05P0	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to:
	<ul style="list-style-type: none"> a) explain database concepts b) describe database design concepts c) describe database objects d) explain the procedure of printing database objects 		<ul style="list-style-type: none"> a) create a database b) create database objects c) print database objects
		7.1.05P1	Database creation
		7.1.05P2	<ul style="list-style-type: none"> Database objects i) tables ii) queries iii) forms iv) reports v) macros
		7.1.05P3	Printing database objects
7.1.05C	Competence The trainee should have the ability to use database program		<i>Suggested Teaching/Learning Activities</i>
			<ul style="list-style-type: none"> - Interactive lectures - Demonstration - Computer laboratory practical

	<i>Suggested Teaching/Learning Resources</i>		<i>Content</i>
	- Textbooks	7.1.06T1	Presentation software concepts
	- Multimedia projector		i) definition
	- e-content		ii) examples of presentations software
	- Computer with internet		iii) importance
	- Relevant software	7.1.06T2	Slide layouts
		7.1.06T3	Creating slides
		7.1.06T4	Slides editing
	<i>Suggested Evaluation Methods</i>		i) add
	- Assignments		ii) delete
	- Practical tests	7.1.06T5	iii) order
	- Written tests		Formatting slides
			i) text formatting
			ii) footer and header
			iii) page number
			iv) slide designs
		7.1.06T6	Slide shows
			i) slide transitions
			ii) slide animations
		7.1.06T7	Printing
			i) slides
			ii) handouts
			iii) notes
		7.1.06T8	Packaging a presentation
	Theory		Practice
7.1.06	PRESENTATION SOFTWARE		
7.1.06T0	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) explain presentation software concepts b) identify slide layouts c) explain the procedure of creating slides d) describe slide editing e) describe slide formatting f) describe slide shows g) explain procedure of printing h) explain procedure of packaging a presentation	7.1.06P0	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) create slides b) edit slides c) format slides d) present slides e) print slides f) package a presentation
7.1.06C	Competence The trainee should have the ability to use a presentation package	7.1.06P1	<i>Content</i> Creating slides
		7.1.06P2	Slides editing
			i) add

- ii) delete
 - iii) order
- 7.1.06P3 Formatting slides
- i) text formatting
 - ii) footer and header
 - iii) page number
 - iv) slide designs
- 7.1.06P4 Slide shows
- i) slide transitions
 - ii) slide animations
- 7.1.06P5 Printing
- i) slides
 - ii) handouts
 - iii) notes
- 7.1.06P6 Packaging a presentation

*Suggested
Teaching/Learning
Activities*

- interactive lectures
- demonstration
- computer laboratory practice

*Suggested
Teaching/Learning
Resources*

- textbooks
- multimedia projectors
- e-content
- computer system
- presentation package
- white board/-smart board

*Suggested Evaluation
Methods*

- Assignments
- Practical tests
- Written tests

7.1.07 INTERNET AND E-MAIL

Theory

- 7.1.07T0 *Specific Objectives*
 By the end of the sub-module unit, the trainee should be able to:
- a) explain Internet concepts
 - b) explain Internet services
 - c) describe e-mail
 - d) explain the impact of Internet to society
 - e) discuss Internet security

- 7.1.07C **Competence**
 The trainee should have the ability to;
- i) browse the Internet
 - ii) communicate using the Internet

Content

- 7.1.07T1 Concepts of Internet
- i) definition of terminologies
 - ii) Internet connectivity requirements
 - iii) evolution of the Internet
 - iv) importance of the Internet
 - v) web browsers
 - vi) web site
- 7.1.07T2 Services of the Internet
- i) surfing
 - ii) e-mail
 - iii) chatting
 - iv) teleconferencing
 - v) news groups
 - vi) telnets
 - vii) World Wide Web (WWW)

7.1.07T3	E-Mail	<i>Suggested Teaching/Learning Resources</i>
	i) Email software ii) Email management	- Textbooks - Multimedia projector - Internet - E-mail Software
7.1.07T4	Impact of the internet to society	
7.1.07T5	Internet security	

Practice

7.1.07P0	<i>Specific Objectives</i>
	By the end of the sub-module unit, the trainee should be able to: a) search information from the internet b) use e-mail services

Suggested Evaluation Methods

- Assignments
- Practical tests
- Written tests

7.1.08 EMERGING TRENDS IN COMPUTER APPLICATION

Content

7.1.07P1	Information search
	i) search engines ii) information filtering
7.1.07P2	E-Mail

i) configure mail software
ii) create e-mail accounts
iii) check mails
iv) create messages
v) send mail
vi) reply mail
vii) attachments
viii) contacts
ix) distribution lists

Theory

Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) identify emerging trends in computer application
- b) explain challenges of emerging trends in computer application
- c) explain how to cope with emerging trends in computer application

7.1.08C

Competence

The trainee should have the ability to:

- i) identify emerging trends in computer applications
- ii) cope with challenges of emerging trends in computer application

	<i>Content</i>	
7.1.08T1	Emerging trends in Computer application	7.1.08P1
7.1.08T2	Challenges of emerging trends in computer application	Coping with challenges of emerging trends in computer application
7.1.08T3	Coping with emerging trends	
	Practice	
7.1.08P0	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to cope with challenges of emerging trends in computer application.	
		<i>Suggested Teaching/Learning Resources</i>
		- Internet - Journal - Magazines - Newspapers
		<i>Suggested Evaluation Methods</i>
		- Assignments - Written tests

8.1.0 MATHEMATICS

8.1.1 Introduction

This module unit is intended to equip the trainee with relevant knowledge, skills and attitudes in basic elements of mathematics to facilitate his/her understanding of computer systems.

8.1.2 General Objectives

By the end of this module unit, the trainee should be able to:

- a) perform arithmetic involving different number systems
- b) use mathematics techniques to solve computational tasks
- c) apply mathematical techniques in making decisions
- d) appreciate the role of mathematics in computing
- e) appreciate the application of computers in mathematics
- f) recognize emerging issues in mathematics

8.1.3 Module Unit Summary and Time Allocation

Code	Sub-module Unit	Content	Total (Hrs)		
			Theory	Practice	Total
8.1.01	Number System, Coding And Computational Arithmetic	<ul style="list-style-type: none">• Definition• Number systems• Binary arithmetic• Coding systems• Data presentation• Methods of	8	6	14
8.1.02	Algebra, Functions and Graphs	<ul style="list-style-type: none">• Simultaneous and quadratic equations• Types of functions• Equation of a straight line• Linear inequalities	10	8	18
8.1.03	Binomial Expansion	<ul style="list-style-type: none">• Binomial expression• Binomial theorem• Pascal's Triangle	6	4	10
8.1.04	Set Theory	<ul style="list-style-type: none">• Terminologies• Properties of sets• Set operations• Venn diagrams• Application areas of sets	8	6	14

Code	Sub-module Unit	Content	Total (Hrs)		
			Theory	Practice	Total
8.1.05	Matrices	<ul style="list-style-type: none"> • Terms related to matrices • operations on matrices • Methods used to solve simultaneous equation using matrices (up to 3 unknowns) 	14	14	28
8.1.06	Statistics	<ul style="list-style-type: none"> • Terms related to statistics • Types of data • Data collection and presentation methods • Measures of central tendency • Measures of dispersion 	14	10	24
8.1.07	Elements of Probability	<ul style="list-style-type: none"> • Terms related to probability • Permutation and combination • Properties of a probability measure • Rules of probability • Probability tree • Conditional probability • Mathematical expectation • Probability distribution 	12	8	20
8.1.08	Emerging Trends	<ul style="list-style-type: none"> • Emerging trends in mathematics • Challenges • Coping with emerging trends 	4	0	4
Total			76	56	132

8.1.01	NUMBER SYSTEM, CODING AND COMPUTATIONAL ARITHMETIC		- GRAY Data representation - fixed point representation - floating point representation
	Theory		
8.1.01T	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) define a number system b) describe the various number systems c) explain binary arithmetic d) explain coding systems e) describe methods of data presentation	8.1.01P	Practice <i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) convert numbers from one number system to another b) carry out binary arithmetic c) code data using different coding systems d) Represent data
8.1.01C	Competence The trainee should have the ability to: i) convert numbers from one system to another ii) perform arithmetic operations iii) represent data		<i>Content</i> Conversions Binary arithmetic Coding systems Data representation
8.1.01T1	Definition of number system	8.1.01P1	<i>Suggested Teaching/Learning Activities</i> - Interactive lecture - Demonstration
8.1.01T2	Number systems - decimal - binary - octal - hex	8.1.01P2	<i>Suggested Teaching/Learning Resources</i> - Textbooks - Memory modules - Internet - LCD projectors
8.1.01T3	Binary arithmetic	8.1.01P3	
8.1.01T4	Coding systems - BCD - ASCII - EBCDIC - EXCESS-3	8.1.01P4	

	<i>Suggested Evaluation Methods</i>	8.1.02T4 8.1.02T5	Linear inequalities Graphs of quadratic and linear inequalities
8.1.02	ALGEBRA, FUNCTIONS AND GRAPHS		Practice
	Theory	8.1.02P	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: f) solve simultaneous and quadratic equations g) determine the equation of a straight line h) solve linear inequalities i) draw quadratic and inequalities graphs
8.1.02T	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) explain simultaneous and quadratic equations b) explain types of functions c) describe the equation of a straight line d) describe linear inequalities e) describe graphs of quadratic and linear inequalities	8.1.02P1 8.1.02P2 8.1.02P3 8.1.02P4	<i>Content</i> Simultaneous and quadratic equations Equation of straight lines Linear inequalities Graphs of quadratic and inequalities
8.1.02C	Competence The trainee should have the ability to: i) Manipulate algebraic expressions. ii) Use functional notation. iii) Solve algebraic equations. iv) Analyze data using graphs		<i>Suggested Teaching/Learning Activities</i> - Interactive lecture - Demonstration
	<i>Content</i>		<i>Suggested Teaching/Learning Resources</i> - Textbooks - Internet - LCD projectors
8.1.02T1	Simultaneous and quadratic equations		<i>Suggested Evaluation Methods</i>
8.1.02T2	Types of functions		- Class assignment
8.1.02T3	Equation of straight lines		- Examination

	- Term papers		
8.1.03	BINOMIAL EXPANSION	<i>Content</i>	
	Theory	8.1.03P1 8.1.03P2 8.1.03P3	Binomial expressions Binomial theorem Pascal's Triangle
8.1.03T	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) describe binomial expression b) state the binomial theorem c) describe Pascal's Triangle	<i>Suggested Teaching/Learning Activities</i>	- Interactive lecture - Demonstration
8.1.03C	Competence The trainee should have the ability to: i) Apply binomial expressions ii) Generate the Pascal's Triangle iii) Use the Pascal's Triangle	<i>Suggested Teaching/Learning Resources</i>	- Textbooks - Internet - LCD projector
		8.1.04	<i>Suggested Evaluation Methods</i> - Class assignment - Examination
			SET THEORY
	Theory		
8.1.03T1	<i>Content</i> Binomial expressions	8.1.04T	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to:
8.1.03T2	Binomial theorem		a) define terminologies related to sets
8.1.03T3	Pascal's Triangle		b) explain the properties of sets
	Practice		c) describe Venn diagrams
8.1.03P	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) expand binomial expressions using the binomial theorem b) expand binomial expression using the Pascal's Triangle		d) explain set operations e) identify application areas of sets

8.1.04C	Competence The trainee should have the ability to apply set theory in solving tasks	<i>Suggested Evaluation Methods</i> - Class assignment - Examination - Term papers
	<i>Content</i>	
8.1.04T1	Set theory concepts i) definition of a set ii) universal set iii) empty set iv) subset	8.1.05 MATRICES
8.1.04T2	Set properties	Theory
8.1.04T3	Venn diagrams	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to:
8.1.04T4	Set Operations	c) define terms related to matrices
8.1.04T5	Application of set theory	d) explain operations on matrices
	Practice	e) describe the methods used to solve simultaneous equation using matrices (up to 3 unknowns)
8.1.04P	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) carry out set operations b) draw Venn diagrams	8.1.05C Competence The trainee should have the ability to solve simultaneous equations using matrices
	<i>Content</i>	<i>Content</i>
8.1.04P1	Set Operations	8.1.05T1 Terminologies
8.1.04P2	Venn diagrams	i) matrix ii) square and rectangular matrix iii) identity matrix iv) singular matrix v) unit matrix vi) inverse matrix vii) orthogonal matrix viii) adjoint ix) cofactors
	<i>Suggested Teaching/Learning Activities</i> - Interactive lecture - Demonstration	8.1.05T2 Operations on matrices 8.1.05T3 Simultaneous equations of three unknowns i) The cofactor method
	<i>Suggested Teaching/Learning Resources</i> - Textbooks - Internet - LCD projectors	

	ii) Cramer's rule iii) Gaussian elimination method	8.1.06 STATISTICS
	Practice	Theory
8.1.05P	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) carry out operations on matrices b) solve simultaneous equation using matrices (up to 3 unknowns)	8.1.06T0 <i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) define terms related to statistics b) describe types of data c) explain data collection and presentation methods d) describe the measures of central tendency e) describe the measures of dispersion
	<i>Content</i>	
8.1.05P1	Operations on matrices	8.1.06C Competence
8.1.05P2	Simultaneous equations i) the cofactor method ii) Cramer's rule iii) Gaussian elimination method	The trainee should have the ability to: i) calculate the measures of central tendency ii) calculate the measures of dispersion
	<i>Suggested Teaching/Learning Activities</i>	<i>Content</i>
	- Interactive lecture - Demonstration	8.1.06T1 Terminologies i) statistics ii) data
	<i>Suggested Teaching/Learning Resources</i>	8.1.06T2 Types of data 8.1.06T3 Data collection and presentation
	- Textbooks - Internet - LCD projectors	8.1.06T4 Measures of central tendency i) properties ii) arithmetic mean iii) geometric mean iv) harmonic mean v) median vi) mode
	<i>Suggested Evaluation Methods</i>	8.1.06T5 Measures of dispersion i) range ii) mean deviation
	- Class assignment - Examination - Term papers	

	iii) standard deviation iv) quartiles, deciles, percentiles v) skewness vi) kurtosis	8.1.07	ELEMENTS OF PROBABILITY
	Practice		Theory
8.1.06P	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) calculate the measures of central tendency b) calculate the measures of dispersion	8.1.07T	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) define the terms related to probability b) explain permutation and combination c) state the properties of a probability measure d) outline the rules of probability e) describe a probability tree f) explain conditional probability g) explain mathematical expectation h) describe probability distribution
8.1.06P1	<i>Content</i> Measures of central tendency		
8.1.06P2	Measures of dispersion		
	<i>Suggested Teaching/Learning Activities</i> - Interactive lecture - Demonstration - Field work	8.1.07C	Competence The trainee should have the ability to: i) apply the rules of probability ii) use probability tree iii) use standard normal and <i>t</i> -distribution tables
	<i>Suggested Teaching/Learning Resources</i> - Textbooks - Internet - LCD projectors		
	<i>Suggested Evaluation Methods</i> - Class assignment - Examination - Term papers	8.1.07T1	<i>Content</i> Definition of terms i) probability ii) discrete variable iii) continuous variable
		8.1.07T2	Permutation and combination
		8.1.07T3	Properties of probability measure

8.1.07T4	Rules of probability	v) poisson as an approximate to binomial
8.1.07T5	Probability tree	vi) normal as an approximate to Binomial
8.1.07T6	Conditional probability	
8.1.07T7	Mathematical expectation	
8.1.07T8	Probability distribution <ul style="list-style-type: none"> i) binomial ii) poisson iii) uniform iv) normal v) poisson as an approximate to binomial vi) normal as an approximate to binomial 	8.1.07P7 Probability distribution using a computer

Practice

- 8.1.07P *Specific Objectives*
 By the end of the sub-module unit, the trainee should be able to:
- a) compute permutations and combinations
 - b) draw probability trees
 - c) compute conditional probability
 - d) expected values
 - e) determine probability using probability distribution

Content

- 8.1.07P1 Permutation and combination
- 8.1.07P2 Probability tree
- 8.1.07P3 Conditional probability
- 8.1.07P4 Probability distribution
 - i) binomial
 - ii) poisson
 - iii) uniform
 - iv) normal

8.1.08 EMERGING TRENDS

Theory

Specific Objectives

- By the end of the sub-module unit, the trainee should be able to:
- a) outline emerging trends in mathematics
 - b) describe the challenges of the emerging trends
 - c) suggest ways of coping with challenges of emerging trends

8.1.08C	Competence The trainee should have the ability to: i) identify emerging trends in mathematics ii) cope with challenges of emerging trends in mathematics	<i>Suggested Teaching/Learning Activities</i> - Interactive lecture - Demonstration
	<i>Content</i>	<i>Suggested Teaching/Learning Resources</i> - Textbooks - Internet - LCD projectors
8.1.08T1	Emerging trends in mathematics	<i>Suggested Evaluation Methods</i> - Class assignment - Examination - Term papers
8.1.08T2	Challenges of emerging trends in mathematics	
8.1.08T3	Coping with challenges of emerging trends in mathematics	

9.1.0 OPERATING SYSTEMS

9.1.1 Introduction

This module unit is intended to equip the trainee with knowledge, skills and attitudes that will enable him/her to appreciate the function of the operating system, select, install and use operating system.

9.1.2 General objectives

By the end of this module unit, the trainee should be able to:

- a) show understanding of the principles of operating systems
- b) install operating system
- c) use operating systems platform in a computer environment
- d) recognize emerging trends in operating systems

9.1.3 Module Summary and Time Allocation

Code	Sub-module Unit	Content	Total (Hrs)		
			Theory	Practice	Total
9.1.01	Fundamentals of operating systems	<ul style="list-style-type: none">• Definition of Operating system.• Concepts of operating systems• Evolution of Operating systems• Definition of Operating system terminologies• Operating systems structures• Types of Operating systems• Functions of Operating systems• Operating system installation	18	8	26
9.1.02	Process management	<ul style="list-style-type: none">• Process concepts• Process States• Concurrency control• Process scheduling• Deadlocks	30	4	34
9.1.03	Memory Management	<ul style="list-style-type: none">• Definition of memory management• Functions of memory	16	6	22

Code	Sub-module Unit	Content	Total (Hrs)		
			Theory	Practice	Total
		<ul style="list-style-type: none"> management Memory management and allocation techniques 			
9.1.04	Device I/O Management	<ul style="list-style-type: none"> Objectives of device I/O management Hardware concepts in device I/O management Principles of I/O software I/O software layers Disks Computer Clock System Computer Terminals Virtual devices 	16	13	29
9.1.05	File management	<ul style="list-style-type: none"> Objectives of file management File system File access methods Directory implementation File allocation techniques File protection and security 	16	10	26
9.1.06	Emerging trends	<ul style="list-style-type: none"> Emerging trends in Operating Systems Challenges of emerging trends Coping with emerging trends in Operating Systems 	4	2	6
Total			100	43	143

9.1.01	FUNDAMENTALS OF OPERATING SYSTEMS	9.1.01T3 Evolution of operating systems 9.1.01T4 Operating systems Structures i) monolithic systems ii) layered systems iii) virtual machine iv) client-server model
	Theory	
9.1.01T	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) define an operating system b) explain concepts of operating system c) outline the evolution of operating systems d) describe the operating system structures e) explain types of operating systems f) explain the functions of operating system	9.1.01T5 Types of operating systems 9.1.01T6 Functions of operating systems
		Practice
9.1.01C	Competence The trainee should have the ability to: i) Select Operating system for different operating environments ii) Install an operating system	9.1.01P <i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) identify different types of operating systems b) install an operating system
	<i>Content</i>	<i>Content</i>
9.1.01T1	Definition of operating system	9.1.01P1 Types of operating systems
9.1.01T2	Concepts of operating systems i) characteristics ii) objectives / goals iii) kernel iv) system call v) shell	9.1.01P2 Operating system installation i) selection of operating system ii) installing procedure
		<i>Suggested Teaching/Learning Activities</i> - Interactive lecture - Discussion - Computer laboratory practice

	<i>Suggested Teaching/Learning Resources</i>	9.1.02T2 9.1.02T3	iii) process control block Process states Concurrency control i) inter-process communication ii) synchronisation - semaphores - monitors - message passing
	<i>Suggested Evaluation Methods</i>	9.1.02T4 9.1.02T5	Interprocess communication Process scheduling i) features of scheduling algorithms ii) types of schedulers iii) scheduling algorithms - non-preemptive - preemptive - priority
9.1.02	PROCESS MANAGEMENT		
	Theory		
9.1.02T	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) explain process concepts b) describe process states c) explain concurrency control d) explain inter-process communication e) describe process scheduling f) explain deadlocks	9.1.02T6	Deadlocks i) definitions ii) conditions for deadlock iii) deadlock detection and recovery iv) deadlock avoidance v) deadlock prevention vi) resource allocation graphs
	Competence The trainee should have the ability to recognise the function of operating system in process management	9.1.02P	Practice <i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to draw process state models
	<i>Content</i>		<i>Content</i>
9.1.02T1	Process concepts i) process ii) threads	9.1.02P1	Process states <i>Suggested Teaching/Learning Activities</i> - Interactive Lecture - Discussion

	<ul style="list-style-type: none"> - Computer Laboratory Practice <p><i>Suggested Teaching/Learning Resources</i></p> <ul style="list-style-type: none"> - Textbooks - Computer - Internet - Operating system <p><i>Suggested Evaluation Methods</i></p> <ul style="list-style-type: none"> - Written tests - Assignment 	<p>9.1.03T3</p> <ul style="list-style-type: none"> management Memory management techniques i) Partitions <ul style="list-style-type: none"> - fixed partitioning - dynamic partitioning ii) Virtual memory <ul style="list-style-type: none"> - basic concepts o thrashing o overlays - paging - segmentation
9.1.03	MEMORY MANAGEMENT	<p>9.1.03T4</p> <ul style="list-style-type: none"> Memory management policies i) fetch ii) placement iii) replacement iv) cleaning
	Theory	Practice
9.1.03T	<p><i>Specific Objectives</i></p> <p>By the end of the sub-module unit, the trainee should be able to:</p> <ul style="list-style-type: none"> a) define Memory Management b) outline the objectives of memory management c) describe memory management techniques d) explain memory management policies 	<p>9.1.03P</p> <p><i>Specific Objectives</i></p> <p>By the end of the sub-module unit, the trainee should be able to:</p> <ul style="list-style-type: none"> a) illustrate memory partitioning b) demonstrate swapping c) demonstrate paging
9.1.03C	Competence The trainee should have the ability to use memory effectively	<p><i>Content</i></p> <p>9.1.03P1 Memory portioning</p> <p>9.1.03P2 Memory scrapping</p> <p>9.1.03P3 Paging</p> <p><i>Suggested Teaching/Learning Activities</i></p> <ul style="list-style-type: none"> - Interactive lecture - Discussion - Computer laboratory practice
9.1.03T1	Content	Definition of memory management
9.1.03T2	Content	Objectives of memory

	<i>Suggested Teaching/Learning Resources</i>	<i>Content</i>
	<ul style="list-style-type: none"> - Text Books - Computer - Internet - Operating system 	<p>9.1.04T1 Objectives of device I/O management</p>
		<p>9.1.04T2 I/O device concepts</p> <ul style="list-style-type: none"> i) I/O categories ii) device controllers iii) program I/O iv) interrupt-driven I/O v) Direct Memory Access (DMA I/O)
9.1.04	<p>DEVICE I/O MANAGEMENT</p> <p>Theory</p>	<p>9.1.04T3 I/O software</p> <ul style="list-style-type: none"> i) Principle of I/O software ii) I/O software layers <p>9.1.04T4 Disks</p> <ul style="list-style-type: none"> i) structure ii) operations iii) disk arm scheduling algorithms <ul style="list-style-type: none"> - First In First Out (FIFO) - Shortest Seek Time First (SSTF) - SCAN - Circular SCAN (C-SCAN) - LOOK - Circular LOOK (C-LOOK) <p>iv) RAM disk</p> <p>v) RAID</p> <p>9.1.04T5 Computer Clock System</p> <ul style="list-style-type: none"> i) hardware ii) software <p>9.1.04T6 Computer Terminals</p> <ul style="list-style-type: none"> i) terminal hardware ii) terminal software <p>9.1.04T7 Virtual devices</p> <ul style="list-style-type: none"> i) objectives of virtual devices ii) spooling iii) buffering iv) caching
9.1.04C	<p>Competence</p> <p>The trainee should have the ability to:</p> <ul style="list-style-type: none"> i) appreciate the function of operating system device i/o management ii) install I/O device drivers 	

Practice	9.1.05	FILE MANAGEMENT
9.1.04P0 <i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) install i/o device drivers b) identify computer terminals c) calculate seek length	9.1.05T0	Theory <i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) explain the objectives of file management b) explain file systems c) explain file access methods d) describe directory implementation e) explain file allocation techniques f) explain file protection and security
<i>Content</i> 9.1.04P1 Computer Terminals 9.1.04P2 Device I/O driver installation 9.1.04P3 Disk arm scheduling algorithms	9.1.05C	Competence The trainee should have the ability to manage files
<i>Suggested Teaching/Learning Activities</i> - Interactive lecture - Discussion - Computer laboratory practice	9.1.05T1	<i>Content</i> Objectives of file management
<i>Suggested Teaching/Learning Resources</i> - Text Books - Computer - Internet - operating system	9.1.05T2	File system i) naming ii) structure iii) types iv) attributes v) operations
<i>Suggested Evaluation Methods</i> - Written tests - Assignment	9.1.05T3 9.1.05T4 9.1.05T5 9.1.05T6	File access methods Directory implementation File allocation techniques File protection and security i) importance ii) access control iii) audit trail

Practice		9.1.06	EMERGING TRENDS IN OPERATION SYSTEM
9.1.05P	<p><i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to:</p> <ul style="list-style-type: none"> a) implement file operations b) implement directory operation c) apply basic file protection and security mechanisms 	9.1.06T	<p><i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to:</p> <ul style="list-style-type: none"> a) explain the emerging trends in operating systems b) explain the challenges of emerging trends in operating systems c) cope with emerging trends in operating systems
9.1.05T1	<i>Content</i> File operations	9.1.06C	<i>Competence</i> The trainee should have the ability to cope with emerging trends in operating systems
9.1.05T2	Directory operations	9.1.06T1	<i>Content</i> Emerging trends
9.1.05T3	File protection and security	9.1.06T2	Challenges of emerging trends
	<ul style="list-style-type: none"> i) access control ii) audit trail 	9.1.06T3	Coping with emerging trends in Operating Systems
	<i>Suggested Teaching/Learning Activities</i>		<i>Suggested Teaching/Learning Activities</i>
	<ul style="list-style-type: none"> - Interactive Lecture - Discussion - Computer Laboratory Practice 		<ul style="list-style-type: none"> - Interactive lecture - Discussion - Case study
	<i>Suggested Teaching/Learning Resources</i>		
	<ul style="list-style-type: none"> - Text Books - Computer - Internet - operating system 		
	<i>Suggested Evaluation Methods</i>		
	<ul style="list-style-type: none"> - Written tests - Assignment 		

*Suggested
Teaching/Learning
Resources*

- Textbooks
- Internet
- Journals

*Suggested Evaluation
Methods*

- Written tests
- Assignment

10.1.0 BASIC ELECTRONICS

10.1.1 Introduction

This module unit is intended to equip the trainee with relevant knowledge, skills and attitudes in basic elements of electronics to facilitate his/her understanding of digital system.

10.1.2 General Objectives

- a) show understanding of simple a.c and d.c circuits
- b) recognise various electronic components
- c) show understanding of basic principles of semi-conductors
- d) distinguish types of memories
- e) show understanding of number systems
- f) show understanding of the use of codes
- g) appreciate the use of logic gates and Boolean algebra

10.1.3 Module Unit Summary and Time Allocation

Code	Sub-module Unit	Content	Time (Hrs)		
			Theory	Practice	Total
10.1.01	Introduction to electrical circuits	<ul style="list-style-type: none">• Basic electrical quantities and their units	6	2	8
10.1.02	Simple a.c. circuits	<ul style="list-style-type: none">• Effects of passive elements on current and voltage in a.c. circuits	8	4	12
10.1.03	Simple d.c. circuits	<ul style="list-style-type: none">• Simple d.c. circuit• Resistivity of metal conductors	9	4	13
10.1.04	Electronic components	<ul style="list-style-type: none">• Electronic components• Explanation of characteristics of electronic components• Statement of application of various components	9	4	13
10.1.05	Semiconductor theory	<ul style="list-style-type: none">• Structure of matter.• Movement of electrons in conductors and	12	4	16

Code	Sub-module Unit	Content	Time (Hrs)		
			Theory	Practice	Total
		<ul style="list-style-type: none"> semiconductors. • Semiconductor materials • Formation of P and N-type materials • Operation of PNP and NPN transistors 			
10.1.06	Memories	<ul style="list-style-type: none"> • Definition of terminologies • Classification of memories • Semiconductor memories • Magnetic memories • Optical storage 	10	4	14
10.1.07	Number systems	<ul style="list-style-type: none"> • Number systems • Base conversions • Binary arithmetic operations 	11	11	22
10.1.08	Binary Codes	<ul style="list-style-type: none"> • Importance of binary codes • Binary codes • BCD arithmetic 	10	10	20
10.1.09	Logic Gates and Boolean Algebra	<ul style="list-style-type: none"> • Definition • Minimisation of logic expressions 	10	11	21
10.1.10	Emerging Trends in Electronics	<ul style="list-style-type: none"> • Emerging • Challenges • Coping 	4	0	4
Total			89	54	143

	10.1.01	INTRODUCTION TO ELECTRICAL CIRCUITS		
		Theory		
	10.1.01T0	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to explain the basic electrical quantities and their units	<ul style="list-style-type: none"> - energy in joules <p><i>Suggested Teaching/Learning Activities</i></p> <ul style="list-style-type: none"> - Demonstration - Interactive lecture 	
	10.1.01C	Competence The trainee should have the ability to identify simple electrical circuit and their quantities	<p><i>Suggested Evaluation Methods</i></p> <ul style="list-style-type: none"> - Assignments - Written tests 	
		<i>Content</i>		
	10.1.01T1	Basic electrical quantities and their units <ul style="list-style-type: none"> - E.M.F in volts - current in Amperes - resistance in ohms - power in watts - energy in joules - e.m.f in volts 	10.1.02	SIMPLE A.C CIRCUITS
		Practice		Theory
	10.1.01P0	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to identify simple electrical circuits and their quantities	10.1.02T0	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to:
				<ul style="list-style-type: none"> a) explain terminologies used in a.c circuits b) explain the effects of passive elements on current and voltage in a.c circuits c) explain series and parallel connections
		<i>Content</i>		
	10.1.01P1	Basic electrical quantities and their units <ul style="list-style-type: none"> - e.m.f in volts - current in Amperes - resistance in ohms - power in watts 	10.1.02C	Competence The trainee should have the ability to:
				<ul style="list-style-type: none"> i) Verify effects of passive elements on voltage and current

- ii) Solve tasks related to series and parallel circuits
- iii) draw and interpret simple A.C. circuits

Content

- 10.1.02T1 Terminologies used in A.C circuits.
- i) cycle
 - ii) periodic time
 - iii) frequency
 - iv) peak and average values
- 10.1.02T1 Effects of passive elements on current and voltage in A.C circuits
- i) resistance
 - ii) inductance
 - iii) capacitance
 - iv) waveforms and phasor diagrams
- 10.1.02T1 Series and parallel circuits

Practice

- 10.1.02P0 *Specific Objectives*
By the end of the sub-module unit, the trainee should be able to:
- a) verify effects of passive elements on voltage and current
 - b) solve tasks related to series and parallel circuits
 - c) draw and interpret simple a.c circuits

Content

- 10.1.02P1 Effects of passive elements on voltage and current
- 10.1.02P2 Tasks related to series and parallel circuits
- 10.1.02P3 Simple a.c circuit diagrams

Suggested Teaching/Learning Activities

- Demonstration
- interactive lecture

Suggested Teaching/Learning Resources

- Textbooks
- Inductors
- Capacitors
- Resistors
- AC Source of power
- Connecting wires

Suggested Evaluation Methods

- Assignments
- Written tests

10.1.03 SIMPLE D.C. CIRCUITS

Theory

- 10.1.03T0 *Specific Objectives*
By the end of the sub-module unit, the trainee should be able to:
- a) explain the basic operations of simple d.c. circuits
 - b) explain resistivity of different metal conductors

10.1.03C Competence

The trainee should have the ability to demonstrate simple derived draw and interpret simple d.c. circuit

Content

- 10.1.03T1 D.C. circuit

- i) d.c circuit diagram
- ii) resistors in series
- iii) resistors in parallel
- iv) serial-parallel connection

10.1.03T2 Resistivity of metal conductors

- i) length
- ii) cross-section area
- iii) conductivity

Practice

10.1.03P0 *Specific Objectives*
By the end of the sub-module unit, the trainee should be able to:

- a) draw and interpret simple d.c circuit
- b) Setup a simple dc circuit

Content

10.1.03P1 D.C circuit diagrams
10.1.03P2 D.C circuits

Suggested Teaching/Learning Activities

- Demonstration
- interactive lecture
- discussion

Suggested Teaching/Learning Resources

- dry cells
- wires
- metal condors
- resistors

Suggested Evaluation Methods

- Assignments
- Written tests

10.1.04.1 ELECTRONIC COMPONENTS

Theory

10.1.04T0 *Specific Objectives*

By the end of the sub-module unit, the trainee should be able to:

- a) describe various electronic components
- b) explain characteristics of various electronic components
- c) state the application of various electronic components
- d) explain characteristics of integrated circuits

10.1.04C Competence

The trainee should have the ability to identify an electronic component

Content

10.1.04T1 Electronic components

- i) resistor
- ii) capacitor
- iii) diode
- iv) inductor

10.1.04T2 Characteristics of electronic components

10.1.04T3 Application of electronic components

10.1.04T4 Characteristics of integrated circuits

Practice

10.1.04P0 *Specific Objectives*

By the end of the sub-module unit, the trainee should be able to identify an electronic component

- Content*
- 10.1.04P1 Electronic components
 i) resistor
 ii) capacitor
 iii) diode
 iv) inductor
- d) explain the formation of p and n-type materials
 e) describe the operations of P-N junction

Suggested Teaching/Learning Activities

- Demonstration
- Interactive lecture
- Discussion

Suggested Teaching/Learning Resources

- Resistor
- Capacitor
- Diode
- Inductor

Suggested Evaluation Methods

- Assignments
- Written tests

10.1.05 SEMI-CONDUCTOR THEORY

Theory

- 10.1.05T0 *Specific Objectives*
 By the end of the sub-module unit, the trainee should be able to:
- a) describe the structure of matter
 - b) explain the movement of electrons in conductors and semiconductors
 - c) describe various semiconductor materials

- 10.1.05C **Competence**
 The trainee should have the ability to:
- i) draw the structure of an atom
 - ii) identify various semiconductor materials
 - iii) Demonstrate forward and reverse biasing of P-N type junction diodes

- Content*
- 10.1.05T1 Atomic structure
 10.1.05T2 Electrons in conductors and semiconductors
 10.1.05T3 Semiconductor materials
 i) silicon
 ii) germanium
 10.1.05T4 Formation of P and N-type materials
 10.1.05T5 Operation of PNP and NPN transistors

Practice

- 10.1.05P0 *Specific Objectives*
 By the end of the sub-module unit, the trainee should be able to:
- a) draw the structure of an atom
 - b) identify various semiconductor materials
 - c) demonstrate forward and reverse biasing of P-N junction diodes

Content

10.1.05P1 Structure of an atom
10.1.05P2 Semiconductor materials
10.1.05P3 Forward and reverse biasing of junction diodes

Suggested Teaching/Learning Activities

- Demonstration
- Interactive lecture
- Discussion

Suggested Teaching/Learning Resources

- whiteboard
- Charts
- Diodes
- Transistors
- LEDs
- textbooks

Suggested Evaluation Methods

- Assignments
- Written tests

10.1.06 MEMORIES

Theory

10.1.06T0 *Specific Objectives*
By the end of the sub-module unit, the trainee should be able to:
a) define memory
b) describe classes of computer memories types

10.1.06C Competence
The trainee should have the ability to classify memories

Content

10.1.06T1 Definition of memory
10.1.06T2 Computer memories types

- i) Semiconductor memories
 - RAM
 - ROM
 - Flash memory
- ii) Magnetic memories
 - magnetic drum
 - magnetic core
 - magnetic tapes
 - magnetic disks
- iii) Optical storage
 - magnetic optic memory
 - holographic

Practice

10.1.06P0 *Specific Objectives*
By the end of the sub-module unit, the trainee should be able to classify memories

Content

10.1.06P1 Classification of memories

Suggested Teaching/Learning Activities

- Demonstration
- interactive lecture
- discussion

<i>Suggested Teaching/Learning Resources</i>	Practice
- Whiteboard - Textbooks	10.1.07P0 <i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) perform number base conversions b) perform number arithmetic operations
<i>Suggested Evaluation Methods</i>	<i>Content</i>
- Assignments - Written tests	10.1.07P1 Number base conversions 10.1.07P2 Binary number arithmetic operations
10.1.07 NUMBER SYSTEMS	
Theory	
10.1.07T0 <i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) explain number systems b) explain number base conversions c) explain binary arithmetic operations	<i>Suggested Teaching/Learning Activities</i> - Demonstration - interactive lecture - discussion
10.1.07C Competence The trainee should have the ability to: i) Perform number base conversions ii) Perform number arithmetic operations	<i>Suggested Teaching/Learning Resources</i> - White board - Textbooks
<i>Content</i>	<i>Suggested Evaluation Methods</i> - Assignments - Written tests
10.1.07T1 Number systems i) decimal numbers ii) binary numbers iii) octal numbers iv) hexadecimal numbers	10.1.08 BINARY CODES
10.1.07T2 Base conversion	Theory
10.1.07T3 Binary arithmetic i) addition ii) subtraction iii) multiplication iv) division	10.1.08T0 <i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) explain binary codes b) describe BCD arithmetic

10.1.08C Competence

The trainee should have the ability to:

- i) Represent decimal numbers in BCD
- ii) Perform BCD arithmetic

*Content***10.1.08T2 Binary codes**

- i) 8421 BCD
- ii) Excess-3
- iii) Importance of binary codes

10.1.08T3 BCD arithmetic

- i) addition
- ii) subtraction
- iii) multiplication
- iv) division

Practice**10.1.08P0 Specific Objectives**

By the end of the sub-module unit, the trainee should be able to:

- a) representation of decimal numbers in BCD
- b) perform BCD arithmetic

*Content***10.1.08P1 Representation of decimal numbers in BCD****10.1.08P2 BCD arithmetic***Suggested Teaching/Learning Activities*

- Demonstration
- interactive lecture
- discussion

Suggested Teaching/Learning Resources

- Whiteboard
- Textbooks

Suggested Evaluation Methods

- Assignments
- Written tests

10.1.09 LOGIC GATES AND BOOLEAN ALGEBRA**Theory****10.1.09T Specific Objectives**

By the end of the sub-module unit, the trainee should be able to:

- a) explain logic gates
- b) explain the minimisation of logic expressions

10.1.09C Competence

The trainee should have the ability to:

- i) Generate truth tables
- ii) Simplify logical expressions

*Content***10.1.09T1 Logic gates (AND, OR, NOT, NAND, NOR)**

- i) symbols
- ii) truth table

10.1.09T1 Minimisation of logic expressions

- i) Boolean algebra
- ii) KARNAUGH maps

Practice

10.1.09P0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) generate truth tables of logic gates
- b) simplify logical expressions

- a) describe the emerging trends in basic electronics
- b) explain the challenges of emerging trends in basic electronics
- c) cope with emerging trends in basic electronics

Content

10.1.09P1 Truth tables of logic gates

10.1.09P2 Logical expressions

Suggested

Teaching/Learning

Activities

- Demonstration
- Interactive lecture
- Discussion

Suggested

Teaching/Learning

Resources

- White board
- Textbooks
- Internet

Suggested Evaluation

Methods

- Assignments
- Written tests

10.1.10 EMERGING TRENDS

Theory

10.1.10T Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

10.1.10C Competence

The trainee should have the ability to cope with challenges of emerging trends in basic electronics

Content

10.1.10T1 Emerging trends

10.1.10T2 Challenges of emerging trends

10.1.10T3 Coping with emerging trends

Suggested

Teaching/Learning

Activities

- Interactive lecture
- Discussion

Suggested

Teaching/Learning

Resources

- Manuals
- Journals
- Internet

Suggested Evaluation

Methods

- Case study
- Written tests

10.1.0 BASIC ELECTRONICS

10.1.1 Introduction

This module unit is intended to equip the trainee with relevant knowledge, skills and attitudes in basic elements of electronics to facilitate his/her understanding of digital system.

10.1.2 General Objectives

- a) show understanding of simple a.c and d.c circuits
- b) recognise various electronic components
- c) show understanding of basic principles of semi-conductors
- d) distinguish types of memories
- e) show understanding of number systems
- f) show understanding of the use of codes
- g) appreciate the use of logic gates and Boolean algebra

10.1.3 Module Unit Summary and Time Allocation

Code	Sub-module Unit	Content	Time (Hrs)		
			Theory	Practice	Total
10.1.01	Introduction to electrical circuits	<ul style="list-style-type: none">• Basic electrical quantities and their units	6	2	8
10.1.02	Simple a.c. circuits	<ul style="list-style-type: none">• Effects of passive elements on current and voltage in a.c. circuits	8	4	12
10.1.03	Simple d.c. circuits	<ul style="list-style-type: none">• Simple d.c. circuit• Resistivity of metal conductors	9	4	13
10.1.04	Electronic components	<ul style="list-style-type: none">• Electronic components• Explanation of characteristics of electronic components• Statement of application of various components	9	4	13
10.1.05	Semiconductor theory	<ul style="list-style-type: none">• Structure of matter.• Movement of electrons in conductors and	12	4	16

Code	Sub-module Unit	Content	Time (Hrs)		
			Theory	Practice	Total
		<ul style="list-style-type: none"> semiconductors. • Semiconductor materials • Formation of P and N-type materials • Operation of PNP and NPN transistors 			
10.1.06	Memories	<ul style="list-style-type: none"> • Definition of terminologies • Classification of memories • Semiconductor memories • Magnetic memories • Optical storage 	10	4	14
10.1.07	Number systems	<ul style="list-style-type: none"> • Number systems • Base conversions • Binary arithmetic operations 	11	11	22
10.1.08	Binary Codes	<ul style="list-style-type: none"> • Importance of binary codes • Binary codes • BCD arithmetic 	10	10	20
10.1.09	Logic Gates and Boolean Algebra	<ul style="list-style-type: none"> • Definition • Minimisation of logic expressions 	10	11	21
10.1.10	Emerging Trends in Electronics	<ul style="list-style-type: none"> • Emerging • Challenges • Coping 	4	0	4
Total			89	54	143

	10.1.01	INTRODUCTION TO ELECTRICAL CIRCUITS		
		Theory		
	10.1.01T0	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to explain the basic electrical quantities and their units	<ul style="list-style-type: none"> - energy in joules <p><i>Suggested Teaching/Learning Activities</i></p> <ul style="list-style-type: none"> - Demonstration - Interactive lecture 	
	10.1.01C	Competence The trainee should have the ability to identify simple electrical circuit and their quantities	<p><i>Suggested Evaluation Methods</i></p> <ul style="list-style-type: none"> - Assignments - Written tests 	
		<i>Content</i>		
	10.1.01T1	Basic electrical quantities and their units <ul style="list-style-type: none"> - E.M.F in volts - current in Amperes - resistance in ohms - power in watts - energy in joules - e.m.f in volts 	10.1.02	SIMPLE A.C CIRCUITS
		Practice		Theory
	10.1.01P0	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to identify simple electrical circuits and their quantities	10.1.02T0	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to:
				<ul style="list-style-type: none"> a) explain terminologies used in a.c circuits b) explain the effects of passive elements on current and voltage in a.c circuits c) explain series and parallel connections
		<i>Content</i>		
	10.1.01P1	Basic electrical quantities and their units <ul style="list-style-type: none"> - e.m.f in volts - current in Amperes - resistance in ohms - power in watts 	10.1.02C	Competence The trainee should have the ability to:
				<ul style="list-style-type: none"> i) Verify effects of passive elements on voltage and current

- ii) Solve tasks related to series and parallel circuits
- iii) draw and interpret simple A.C. circuits

Content

- 10.1.02T1 Terminologies used in A.C circuits.
- i) cycle
 - ii) periodic time
 - iii) frequency
 - iv) peak and average values
- 10.1.02T1 Effects of passive elements on current and voltage in A.C circuits
- i) resistance
 - ii) inductance
 - iii) capacitance
 - iv) waveforms and phasor diagrams
- 10.1.02T1 Series and parallel circuits

Practice

- 10.1.02P0 *Specific Objectives*
By the end of the sub-module unit, the trainee should be able to:
- a) verify effects of passive elements on voltage and current
 - b) solve tasks related to series and parallel circuits
 - c) draw and interpret simple a.c circuits

Content

- 10.1.02P1 Effects of passive elements on voltage and current
- 10.1.02P2 Tasks related to series and parallel circuits
- 10.1.02P3 Simple a.c circuit diagrams

Suggested Teaching/Learning Activities

- Demonstration
- interactive lecture

Suggested Teaching/Learning Resources

- Textbooks
- Inductors
- Capacitors
- Resistors
- AC Source of power
- Connecting wires

Suggested Evaluation Methods

- Assignments
- Written tests

10.1.03 SIMPLE D.C. CIRCUITS

Theory

- 10.1.03T0 *Specific Objectives*
By the end of the sub-module unit, the trainee should be able to:
- a) explain the basic operations of simple d.c. circuits
 - b) explain resistivity of different metal conductors

10.1.03C Competence

The trainee should have the ability to demonstrate simple derived draw and interpret simple d.c. circuit

Content

- 10.1.03T1 D.C. circuit

- i) d.c circuit diagram
- ii) resistors in series
- iii) resistors in parallel
- iv) serial-parallel connection

10.1.03T2 Resistivity of metal conductors

- i) length
- ii) cross-section area
- iii) conductivity

Practice

10.1.03P0 *Specific Objectives*
By the end of the sub-module unit, the trainee should be able to:

- a) draw and interpret simple d.c circuit
- b) Setup a simple dc circuit

Content

10.1.03P1 D.C circuit diagrams
10.1.03P2 D.C circuits

Suggested Teaching/Learning Activities

- Demonstration
- interactive lecture
- discussion

Suggested Teaching/Learning Resources

- dry cells
- wires
- metal condors
- resistors

Suggested Evaluation Methods

- Assignments
- Written tests

10.1.04.1 ELECTRONIC COMPONENTS

Theory

10.1.04T0 *Specific Objectives*

By the end of the sub-module unit, the trainee should be able to:

- a) describe various electronic components
- b) explain characteristics of various electronic components
- c) state the application of various electronic components
- d) explain characteristics of integrated circuits

10.1.04C Competence

The trainee should have the ability to identify an electronic component

Content

10.1.04T1 Electronic components

- i) resistor
- ii) capacitor
- iii) diode
- iv) inductor

10.1.04T2 Characteristics of electronic components

10.1.04T3 Application of electronic components

10.1.04T4 Characteristics of integrated circuits

Practice

10.1.04P0 *Specific Objectives*

By the end of the sub-module unit, the trainee should be able to identify an electronic component

- Content*
- 10.1.04P1 Electronic components
 i) resistor
 ii) capacitor
 iii) diode
 iv) inductor
- d) explain the formation of p and n-type materials
 e) describe the operations of P-N junction

Suggested Teaching/Learning Activities

- Demonstration
- Interactive lecture
- Discussion

Suggested Teaching/Learning Resources

- Resistor
- Capacitor
- Diode
- Inductor

Suggested Evaluation Methods

- Assignments
- Written tests

10.1.05 SEMI-CONDUCTOR THEORY

Theory

- 10.1.05T0 *Specific Objectives*
 By the end of the sub-module unit, the trainee should be able to:
- a) describe the structure of matter
 - b) explain the movement of electrons in conductors and semiconductors
 - c) describe various semiconductor materials

- 10.1.05C **Competence**
 The trainee should have the ability to:
- i) draw the structure of an atom
 - ii) identify various semiconductor materials
 - iii) Demonstrate forward and reverse biasing of P-N type junction diodes

- Content*
- 10.1.05T1 Atomic structure
 10.1.05T2 Electrons in conductors and semiconductors
 10.1.05T3 Semiconductor materials
 i) silicon
 ii) germanium
 10.1.05T4 Formation of P and N-type materials
 10.1.05T5 Operation of PNP and NPN transistors

Practice

- 10.1.05P0 *Specific Objectives*
 By the end of the sub-module unit, the trainee should be able to:
- a) draw the structure of an atom
 - b) identify various semiconductor materials
 - c) demonstrate forward and reverse biasing of P-N junction diodes

Content

10.1.05P1 Structure of an atom
10.1.05P2 Semiconductor materials
10.1.05P3 Forward and reverse biasing of junction diodes

Suggested Teaching/Learning Activities

- Demonstration
- Interactive lecture
- Discussion

Suggested Teaching/Learning Resources

- whiteboard
- Charts
- Diodes
- Transistors
- LEDs
- textbooks

Suggested Evaluation Methods

- Assignments
- Written tests

10.1.06 MEMORIES

Theory

10.1.06T0 *Specific Objectives*
By the end of the sub-module unit, the trainee should be able to:
a) define memory
b) describe classes of computer memories types

10.1.06C Competence
The trainee should have the ability to classify memories

Content

10.1.06T1 Definition of memory
10.1.06T2 Computer memories types

- i) Semiconductor memories
 - RAM
 - ROM
 - Flash memory
- ii) Magnetic memories
 - magnetic drum
 - magnetic core
 - magnetic tapes
 - magnetic disks
- iii) Optical storage
 - magnetic optic memory
 - holographic

Practice

10.1.06P0 *Specific Objectives*
By the end of the sub-module unit, the trainee should be able to classify memories

Content

10.1.06P1 Classification of memories

Suggested Teaching/Learning Activities

- Demonstration
- interactive lecture
- discussion

<i>Suggested Teaching/Learning Resources</i>	Practice
- Whiteboard - Textbooks	10.1.07P0 <i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) perform number base conversions b) perform number arithmetic operations
<i>Suggested Evaluation Methods</i>	<i>Content</i>
- Assignments - Written tests	10.1.07P1 Number base conversions 10.1.07P2 Binary number arithmetic operations
10.1.07 NUMBER SYSTEMS	
Theory	
10.1.07T0 <i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) explain number systems b) explain number base conversions c) explain binary arithmetic operations	<i>Suggested Teaching/Learning Activities</i> - Demonstration - interactive lecture - discussion
10.1.07C Competence The trainee should have the ability to: i) Perform number base conversions ii) Perform number arithmetic operations	<i>Suggested Teaching/Learning Resources</i> - White board - Textbooks
<i>Content</i>	<i>Suggested Evaluation Methods</i> - Assignments - Written tests
10.1.07T1 Number systems i) decimal numbers ii) binary numbers iii) octal numbers iv) hexadecimal numbers	10.1.08 BINARY CODES
10.1.07T2 Base conversion	Theory
10.1.07T3 Binary arithmetic i) addition ii) subtraction iii) multiplication iv) division	10.1.08T0 <i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) explain binary codes b) describe BCD arithmetic

10.1.08C Competence

The trainee should have the ability to:

- i) Represent decimal numbers in BCD
- ii) Perform BCD arithmetic

*Content***10.1.08T2 Binary codes**

- i) 8421 BCD
- ii) Excess-3
- iii) Importance of binary codes

10.1.08T3 BCD arithmetic

- i) addition
- ii) subtraction
- iii) multiplication
- iv) division

Practice**10.1.08P0 Specific Objectives**

By the end of the sub-module unit, the trainee should be able to:

- a) representation of decimal numbers in BCD
- b) perform BCD arithmetic

*Content***10.1.08P1 Representation of decimal numbers in BCD****10.1.08P2 BCD arithmetic***Suggested Teaching/Learning Activities*

- Demonstration
- interactive lecture
- discussion

Suggested Teaching/Learning Resources

- Whiteboard
- Textbooks

Suggested Evaluation Methods

- Assignments
- Written tests

10.1.09 LOGIC GATES AND BOOLEAN ALGEBRA**Theory****10.1.09T Specific Objectives**

By the end of the sub-module unit, the trainee should be able to:

- a) explain logic gates
- b) explain the minimisation of logic expressions

10.1.09C Competence

The trainee should have the ability to:

- i) Generate truth tables
- ii) Simplify logical expressions

*Content***10.1.09T1 Logic gates (AND, OR, NOT, NAND, NOR)**

- i) symbols
- ii) truth table

10.1.09T1 Minimisation of logic expressions

- i) Boolean algebra
- ii) KARNAUGH maps

Practice

10.1.09P0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) generate truth tables of logic gates
- b) simplify logical expressions

- a) describe the emerging trends in basic electronics
- b) explain the challenges of emerging trends in basic electronics
- c) cope with emerging trends in basic electronics

Content

10.1.09P1 Truth tables of logic gates

10.1.09P2 Logical expressions

Suggested

Teaching/Learning

Activities

- Demonstration
- Interactive lecture
- Discussion

Suggested

Teaching/Learning

Resources

- White board
- Textbooks
- Internet

Suggested Evaluation

Methods

- Assignments
- Written tests

10.1.10 EMERGING TRENDS

Theory

10.1.10T Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

10.1.10C Competence

The trainee should have the ability to cope with challenges of emerging trends in basic electronics

Content

10.1.10T1 Emerging trends

10.1.10T2 Challenges of emerging trends

10.1.10T3 Coping with emerging trends

Suggested

Teaching/Learning

Activities

- Interactive lecture
- Discussion

Suggested

Teaching/Learning

Resources

- Manuals
- Journals
- Internet

Suggested Evaluation

Methods

- Case study
- Written tests

11.1.0 INDUSTRIAL ATTACHMENT

11.1.1 Introduction

This module unit is compulsory for all trainees undertaking technical training programme and is intended to equip the trainee with knowledge, skills and attitudes to enable him/her to perform duties in a real working environment. The rationale of the module unit is to:

- a) enhance the practical and communication skills/competences of trainees
- b) strengthen industrial/institution partnership
- c) provide a nationwide mechanism to address key skill demand
- d) provide employers the opportunity to give back to society
- e) enhance training levels in acquired skills and competences.
- f) provide a mechanism for training institutions to respond to identified areas of national key skill needs
- g) develop the manual skills of trainees associated with scientific and technological operations
- h) develop the trainees' personality and understanding of individuals and groups in work situations
- i) provide the trainee with background information and experience in career choice

11.1.2 General Objectives

By the end of the industrial attachment period, the trainee should be able to:

- a) understand the constraints of working life and functional relationships within and between organisations
- b) appreciate the importance of human relationships and work attitudes
- c) develop procedural knowledge towards work processes.
- d) apply theoretical concepts and school based skills to practice
- e) develop work attitudes like curiousness, self-confidence, maturity and self-reliance
- f) obtain knowledge of potential careers and develop new areas of interest

11.1.3 The industrial attachment scheme will enable training institutions to:

- a) establish link with industry for technical development, particularly in the area of product innovation, design and construction
- b) know skill gaps and improve quality of training
- c) obtain materials for teaching and case studies
- d) have a balance assessment of trainees

- 11.1.4 The Industrial Attachment Scheme will enable employers to:
- a) understand future skills availability.
 - b) improve the training delivered at training institutions for industrial relevance.
 - c) influence the training of future generation of employees.

11.1.5 Suggested Roles of the Training Institution, Industry and Attachés

- 11.1.6 It is the responsibility of the training institution to:
- a) identify trainees who are qualified to go on attachment.
 - b) conduct an industrial attachment orientation and induction to trainees.
 - c) identify opportunities from the industry and match them with the number of trainees qualified to go on attachment.
 - d) prepare a code of conduct to be observed by attaches.
 - e) provide log books to attaches
- 11.1.7 It is the responsibility of the industry to:
- a) appoint an industry supervisor/mentor for the trainee/attachés
 - b) carry out formal introduction/induction to the workplace by the industry supervisor/mentor.
 - c) design a weekly programme of work for the intern to carry out whilst on attachment.
 - d) develop clear and well communicated expectations of the work programme.
 - e) expose attaches to relevant activities and training opportunities.
 - f) supervise and assess progress of the attaches.
 - g) complete and release the logbook of the attached trainees

MODULE II – ICT ASSISTANT

Introduction

This module unit is intended to equip the trainee with knowledge, skills and attitudes that will enable him/her to install and maintain computer hardware and provide user support. The trainee will be competent to perform as an ICT assistant and related positions.

General Objectives

By the end of this module, the trainee should be able to:

- a) operate a computer system
- b) maintain computer system
- c) provide end user support
- d) appreciate programming concepts and techniques
- e) apply basic research techniques
- f) prepare a business plan
- g) develop a trade project

Module Unit Summary and Time Allocation

Code	Module Units	Time (Hrs)
12.2.0	Structured programming	198
13.2.0	Computer Maintenance and Support	188
14.2.0	Computer Application II	152
15.2.0	Trade Project	50
16.2.0	Research Methodology	50
17.2.0	Business Plan	44
Total		682

12.2.0 STRUCTURED PROGRAMMING

12.2.1 Introduction

This module unit is intended to equip the trainee with the knowledge, skills, and attitudes to enable him/her develop programs in structured programming language

12.2.2 General Objectives

By the end of the module unit, the trainee should be able to:

- a) show understanding of computer programming concepts
- b) show understanding the program development cycle
- c) appreciate computer programming approaches
- d) apply program design tools
- e) apply the techniques of programming in C language
- f) prepare program documentation
- g) recognize the emerging trends in computer programming

12.2.3 Module Unit Summary and Time Allocation

Code	Sub-module Unit	Content	Total (Hrs)		
			Theory	Practice	Total
12.2.01	Programming Concepts	<ul style="list-style-type: none">• Programming concepts• Generation of programming languages	10	2	12
12.2.02	Programming Approaches	<ul style="list-style-type: none">• Programming approaches	6	2	8
12.2.03	Program Development	<ul style="list-style-type: none">• Programme specification• Programme development cycle	8	4	12
12.2.04	Program Design	<ul style="list-style-type: none">• Define• Design approaches• Design tools	8	14	22
12.2.05	Introduction to Structured Programming using C language	<ul style="list-style-type: none">• C concepts• C programming environment• C programme format	4	4	8
12.2.06	Fundamentals of C Programming	<ul style="list-style-type: none">• Fundamentals of C programming• Control structures in C• Concepts of sub-programmes	22	40	62

Code	Sub-module Unit	Content	Total (Hrs)		
			Theory	Practice	Total
12.2.07	Pointers and data structures	<ul style="list-style-type: none"> • Description of pointers • Data structures 	14	14	28
12.2.08	Sorting and searching	<ul style="list-style-type: none"> • Sorting techniques • Searching techniques 	10	10	20
12.2.09	Files	<ul style="list-style-type: none"> • File concepts 	4	6	10
12.2.10	Program Documentation	<ul style="list-style-type: none"> • Description of programme documentation 	4	6	10
12.2.11	Emerging Trends in Structural programming	<ul style="list-style-type: none"> • Identification • Challenges • Coping 	6	0	6
Total			96	102	198

12.2.01 PROGRAMMING CONCEPTS

Theory

12.2.01T Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) explain programming concepts
- b) explain the generation of programming languages

12.2.01C Competence

The trainee should have the ability to:

- i) trace the historical evolution of programming languages
- ii) select a programming language

Content

12.2.01T1 Programming concepts

- i) program and programming
- ii) compiler
- iii) interpreter
- iv) editor
- v) linker
- vi) loader

12.2.01T2 Generation of programming languages

- i) machine programming language
- ii) assembly programming language
- iii) high level programming language

- iv) fourth generation programming language
- v) fifth generation language

Practice

12.2.01P0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to trace the history of programming languages

Content

12.2.01P1 History of programming languages

Suggested Teaching/Learning Activities

- Interactive lectures
- Demonstrations
- Discussion
- Computer laboratory practice

Suggested Teaching/Learning Resources

- White board
- Internet
- Textbooks
- Multi-media projector
- Programming language chart

Suggested Evaluation Methods

- Written tests
- Assignments

12.2.02 PROGRAMMING APPROACHES

Theory

12.2.02T Specific Objectives
By the end of the sub-module unit, the trainee should be able to describe programming approaches

12.2.02C Competence

The trainee should have the ability to appreciate programming approaches

Content

12.2.02T1 Programming approaches
i) structured or procedural
ii) event driven programming
iii) object oriented programming
iv) Internet based

Practice

12.2.02P0 Specific Objectives
By the end of the sub-module unit, the trainee should be able to classify Programming languages

Content
12.2.02P1 Classification of programming languages

Suggested Teaching/Learning Activities
- Interactive lectures
- Demonstrations
- Discussion

Suggested Teaching/Learning Resources

- Whiteboard
- Internet
- Textbooks
- Multimedia projector

Suggested Evaluation Methods

- Written tests
- Assignments

PROGRAM DEVELOPMENT

Theory

Specific Objectives
By the end of the sub-module unit, the trainee should be able to:

- a) describe programme specification
- b) describe the program development cycle

Competence

The trainee should have the ability to:

- i) prepare a programme specification
- ii) apply programme development cycle

Content

12.2.03T1 Programme specification
12.2.03T2 Programme development cycle

	Practice	c) describe programme design tools
12.2.03P0	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to prepare a program specification	
	<i>Content</i>	
12.2.03P1	Programme specification	
	<i>Suggested Teaching/Learning Activities</i>	
	<ul style="list-style-type: none"> - Interactive lectures - Demonstrations - Discussion - Computer laboratory practice 	
	<i>Suggested Teaching/Learning Resources</i>	
	<ul style="list-style-type: none"> - Whiteboard - Internet - Textbooks - Multimedia projector 	
	<i>Suggested Evaluation Methods</i>	
	<ul style="list-style-type: none"> - Written tests - Assignments 	
12.2.04	PROGRAMME DESIGN	
	Theory	
12.2.04T	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) define program design b) describe programme design approaches	
	<i>Suggested Teaching/Learning Activities</i>	
	<ul style="list-style-type: none"> - Interactive lectures - Demonstrations - Discussion - Computer laboratory practice 	
12.2.04C	Competence The trainee should have the ability to use the flowchart or pseudo-code to develop algorithms.	
	<i>Content</i>	
12.2.04T1	Definition of programme design	
12.2.04T2	Programme design approaches i) top-down ii) bottom-up iii) data driven	
12.2.04T3	Programme design tools i) flowcharts ii) pseudo-codes iii) decision trees and tables	
	Practice	
12.2.04P0	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to develop program algorithms	
	<i>Content</i>	
12.2.04P1	Programme algorithms i) flowcharts ii) pseudo-codes iii) decision trees and tables	

	<i>Suggested Teaching/Learning Resources</i>	12.2.05T2 C programming language environment 12.2.05T3 Programme format
	<i>Suggested Evaluation Methods</i>	Practice
	- White board - Internet - Textbooks - Multi-media projector	12.2.05P0 <i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) use C programming language environment b) write a simple C program
12.2.05	INTRODUCTION TO STRUCTURED PROGRAMMING USING C LANGUAGE	<i>Content</i> 12.2.05P1 C programming language environment 12.2.05P2 Program format
	Theory	<i>Suggested Teaching/Learning Activities</i> - Interactive lectures - Demonstrations - Discussion - Computer laboratory practice
12.2.05T	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) discuss C concepts b) describe C programming language environment c) explain the C programme format	<i>Suggested Teaching/Learning Resources</i> - White board - Internet - Textbooks - Multi-media projector
12.2.05C	Competence The trainee should have the ability to use C programming language environment	<i>Suggested Evaluation Methods</i> Written tests Assignments
	<i>Content</i>	
12.2.05T1	C concepts i) History of C language ii) Characteristics of C iii) Pre-processor directives iv) C headers	

12.2.06 FUNDAMENTALS OF C PROGRAMMING

Theory

12.2.06T0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) explain fundamentals of C programming
- b) describe the control structures in C
- c) explain concepts of sub-programmes

12.2.06C Competence

The trainee should have the ability to:

- i) use C language concepts
- ii) use control structures in C language
- iii) use sub-programs in C language

Content

12.2.06T1 C Fundamentals

- i) Input/output statements
- ii) C keywords
- iii) Variables
- iv) Data types
- v) Constants
- vi) C operators
- vii) C expressions
- viii) Escape characters

12.2.06T2 Control Structures

- i) sequence
- ii) selection
- iii) iteration

12.2.06T3 Sub-programmes

- i) Types of sub-programmes
- ii) Scope of variables
- iii) Parameter passing

Practice

12.2.06P0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) apply fundamentals of C
- b) implement control structures in C
- c) implement sub-programmes in C language

Content

12.2.06P1 C Fundamentals

- i) C keywords
- ii) variables
- iii) data types
- iv) constants
- v) C operators
- vi) C expressions
- vii) escape characters

12.2.06P2 Control Structures

- i) sequence
- ii) selection
- iii) iteration

12.2.06P3 Sub-programmes

- i) types of sub-programmes
- ii) scope of variables
- iii) parameter passing

Suggested Teaching/Learning Activities

- Interactive lectures
- Demonstrations
- Discussion
- Computer laboratory practice

Suggested Teaching/Learning Resources

- Whiteboard

- Internet
 - Textbooks
 - Multimedia projector
- b) implement data structures

Suggested Evaluation Methods

- Written tests
- Assignments

12.2.07 POINTERS AND DATA STRUCTURES

Theory

12.2.07T Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) describe pointers
- b) describe data structures

12.2.07C Competence

The trainee should have the ability to implement data structures in C language

Content

- 12.2.07T1 Pointers
- 12.2.07T2 Data structures
 - i) arrays
 - ii) structures
 - iii) stacks
 - iv) queues
 - v) trees
 - vi) linked lists

Practice

12.2.07P0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) implement pointers

Content

- 12.2.07P1 Pointers
- 12.2.07P2 Data structures

Suggested Teaching/Learning Activities

- Interactive lectures
- Demonstrations
- Discussion
- Computer laboratory practice

Suggested Teaching/Learning Resources

- Whiteboard
- Internet
- Textbooks
- Multimedia projector

Suggested Evaluation Methods

- Written tests
- Assignments

12.2.08 SORTING AND SEARCHING

Theory

12.2.08T Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) explain sorting techniques
- b) explain searching techniques

<p>12.2.08C Competence The trainee should have the ability to implement sort and search techniques in C</p>	<p><i>Suggested Teaching/Learning Resources</i></p> <ul style="list-style-type: none"> - Whiteboard - Internet - Textbooks - Multimedia projector
<p><i>Content</i></p>	
<p>12.2.08T1 Sorting</p> <ul style="list-style-type: none"> i) bubble ii) selection iii) insertion iv) merge <p>12.2.08T2 Searching</p> <ul style="list-style-type: none"> i) linear ii) binary 	<p><i>Suggested Evaluation Methods</i></p> <ul style="list-style-type: none"> - Written tests - Assignments
<p>Practice</p>	<p>12.2.09 FILES</p>
<p>12.2.08P0 Specific Objectives By the end of the sub-module unit, the trainee should be able to:</p> <ul style="list-style-type: none"> a) implement sorting techniques b) implement searching techniques 	<p>12.2.09T Specific Objectives By the end of the sub-module unit, the trainee should be able to explain file concepts</p>
<p><i>Content</i></p>	
<p>12.2.08P1 Sorting</p> <ul style="list-style-type: none"> i) bubble ii) selection iii) insertion iv) merge <p>12.2.08P2 Searching</p> <ul style="list-style-type: none"> i) linear ii) binary 	<p>12.2.09C Competence The trainee should have the ability to implement files in C</p> <p><i>Content</i></p> <ul style="list-style-type: none"> i) definitions ii) text and binary files iii) opening a file iv) writing to a file v) reading from a file vi) closing a file vii) deleting a file viii) appending data
<p><i>Suggested Teaching/Learning Activities</i></p>	
<ul style="list-style-type: none"> - Interactive lectures - Demonstrations - Discussion - Computer laboratory practice 	<p>12.2.09P0 Specific Objectives By the end of the sub-module unit, the trainee should be able to implement file concepts</p>

<i>Content</i>	12.2.10C Competence
12.2.09P1 File concepts <ul style="list-style-type: none"> i) definitions ii) text and binary files iii) opening a file iv) writing to a file v) reading from a file vi) closing a file vii) deleting a file viii) appending data 	The trainee should have the ability to develop programme documentation

Suggested

Teaching/Learning

Activities

- Interactive lectures
- Demonstrations
- Discussion
- Computer laboratory practice

<i>Content</i>	12.2.10T1 Programme documentation
	<ul style="list-style-type: none"> i) definition ii) types

Practice

12.2.10P0 Specific Objectives	By the end of the sub-module unit, the trainee should be able to develop a program documentation
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Suggested

Teaching/Learning

Resources

- Whiteboard
- Internet
- Textbooks
- Multimedia projector

<i>Content</i>	12.2.10P1 Programme documentation
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Suggested

Teaching/Learning

Activities

- Interactive lectures
- Demonstrations
- Discussion
- Computer laboratory practice

Suggested Evaluation

Methods

- Written tests
- Assignments

Suggested

Teaching/Learning

Resources

- Whiteboard
- Internet
- Textbooks
- Multimedia projector

Suggested Evaluation

Methods

- Written tests
- Assignments

12.2.10 PROGRAMME DOCUMENTATION

Theory

12.2.10T0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to describe programme documentation

	12.2.11	EMERGING TRENDS IN STRUCTURAL PROGRAMMING	<i>Content</i>
		Theory	12.2.11T1 Emerging trends 12.2.11T2 Challenges of emerging trends 12.2.11T3 Coping in emerging trends in structural programming
	12.2.11T	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) identify emerging trends in programming b) explain the challenges of emerging trends in programming c) cope with the emerging trends in programming	<i>Suggested Teaching/Learning Activities</i> <ul style="list-style-type: none"> - Interactive lectures - Demonstrations - Discussion - Computer laboratory practice
	12.2.11C	Competence The trainee should have the ability to: i) identify new trends in programming ii) cope with new trends in programming	<i>Suggested Teaching/Learning Resources</i> <ul style="list-style-type: none"> - Whiteboard - Internet - Textbooks - Multimedia projector <i>Suggested Evaluation Methods</i> <ul style="list-style-type: none"> - Written tests - Assignments

13.2.0 COMPUTER MAINTENANCE AND SUPPORT

13.2.1 Introduction

This module is intended to equip the trainee with knowledge skills and attitudes to enable him/her carry out computer maintenance and provide user support services.

13.2.2 General objectives

By the end of the module unit, the trainee should be able to:

- a) maintain computer system
- b) provide user support
- c) assemble and disassemble computer hardware components
- d) install computer software
- e) troubleshoot computer hardware components
- f) implement computer safety and security measures
- g) use data storage media.
- h) recognise emerging trends in computer maintenance and support.

13.2.3 Module Unit Summary and Time Allocation

Code	Sub-module Unit	Content	Total (Hrs)		
			Theory	Practice	Total
13.2.01	Introduction to Computer Maintenance	<ul style="list-style-type: none">• Definition• Computer hardware components• Computer safety• Maintenance tools, equipment and materials	6	4	10
13.2.02	Maintenance	<ul style="list-style-type: none">• Maintenance concepts• Cleaning detergents• Passive and active maintenance procedures	6	9	15
13.2.03	Computer input and output devices	<ul style="list-style-type: none">• I/O device operations• Types of I/O ports	6	9	15
13.2.04	Motherboard and buses	<ul style="list-style-type: none">• Concepts• Components• Form factors	6	9	15

Code	Sub-module Unit	Content	Total (Hrs)		
			Theory	Practice	Total
		<ul style="list-style-type: none"> • System buses • Installing a computer motherboard 			
13.2.05	Processors	<ul style="list-style-type: none"> • Evolution of processors • Characteristics • Classify • Types of processor slots and sockets 	8	7	15
13.2.06	Memory	<ul style="list-style-type: none"> • Characteristics • Types • Random access memory (ram) technologies • Upgrading RAM • Basic Input Output System (BIOS) hardware and BIOS software • Complementary metal oxide semiconductor (CMOS) settings 	8	7	15
13.2.07	Storage	<ul style="list-style-type: none"> • Types of disks and drives • Flash memory • Disk management techniques • Hard-disk interfaces • Hard disk partitioning and formatting 	6	8	14
13.2.08	Power Supply	<ul style="list-style-type: none"> • Importance • Form factors and connectors • Power supply problems • Power supply protection devices 	6	4	10

Code	Sub-module Unit	Content	Total (Hrs)		
			Theory	Practice	Total
13.2.09	Computer Assembly and Disassembly	<ul style="list-style-type: none"> • Hardware inventory • Hardware assembly and disassembly procedure • Computer upgrading 	8	10	18
13.2.10	Software Installation	<ul style="list-style-type: none"> • File systems • Procedure of software installation 	4	11	15
13.2.11	Troubleshooting	<ul style="list-style-type: none"> • Principles in fault finding • Computer hardware faults • Computer viruses 	8	10	18
13.2.12	Computer User Support	<ul style="list-style-type: none"> • Types of user support • Requirements of user support • Training plans 	6	7	13
13.2.13	Electronic Waste Management	<ul style="list-style-type: none"> • Definition • Classification • Effects of electronic waste • Procedures in electronic waste management 	4	4	8
13.2.14	Emerging Trends In Computer Maintenance and Support	<ul style="list-style-type: none"> • Emerging trends • Challenges • Coping 	5	2	7
Total			87	101	188

<p>13.2.0</p> <p style="text-align: center;">INTRODUCTION TO COMPUTER MAINTENANCE</p> <p style="text-align: center;">Theory</p> <p>13.2.01T <i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to:</p> <ul style="list-style-type: none"> a) define computer terminologies b) outline computer hardware components c) explain computer safety d) describe computer maintenance tools, equipment and materials <p>13.2.01C Competence The trainee should have the ability to:</p> <ul style="list-style-type: none"> i) identify computer components ii) identify maintenance tools, equipment and materials <p><i>Content</i></p> <p>13.2.01T1 Definition of terminologies</p> <ul style="list-style-type: none"> i) hardware ii) software iii) memory <p>13.2.01T2 Computer hardware components</p> <ul style="list-style-type: none"> i) computer safety ii) computer maintenance tools, equipments and materials 	<p>Practice</p> <p>13.2.01P <i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to:</p> <ul style="list-style-type: none"> a) identify computer components b) identify maintenance tools, equipments and materials <p><i>Content</i></p> <p>13.2.01P1 Computer system components</p> <p>13.2.01P2 Maintenance tools, equipment and materials</p> <p><i>Suggested Teaching/Learning Activities</i></p> <ul style="list-style-type: none"> - Interactive lectures - Demonstration - Computer laboratory practical - Group discussion <p><i>Suggested Teaching/Learning Resources</i></p> <ul style="list-style-type: none"> - Textbooks - internet - Computer toolbox - Computer system - whiteboards <p><i>Suggested Evaluation Methods</i></p> <ul style="list-style-type: none"> - Practical tests - Written tests - Assignment
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13.2.02 MAINTENANCE

Theory

13.2.02T Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) explain maintenance concepts

- b) discuss computer cleaning materials, equipment and lubricants

- c) distinguish between passive and active maintenance procedures

13.2.02C Competence

The trainee should have the ability to:

- i) Maintain computer system components
- ii) Select computer cleaning materials and equipment

Content

13.2.02T1 Maintenance concepts

- i) meaning of maintenance
- ii) types of maintenance
 - corrective
 - adaptive
 - preventive
 - perfective

13.2.02T2 Cleaning materials, equipment and lubricants

13.2.02T3 Passive and active maintenance of hardware and software

Practice

13.2.02P Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) prepare maintenance schedule
- b) carry out maintenance

Content

13.2.02P1 Maintenance schedule

13.2.02P2 Maintenance

- i) passive
- ii) active

Suggested Teaching/Learning Activities

- Interactive lectures
- Demonstration
- Computer laboratory practical
- Group discussion

Suggested Teaching/Learning Resources

- Text books
- Internet
- Computer toolbox
- Computer system
- Whiteboards

Suggested Evaluation Methods

- Practical tests
- Written tests
- Assignment

13.2.03 COMPUTER INPUT AND OUTPUT (I/O) DEVICES

Theory

13.2.03T Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) describe I/O device operations
- b) describe types of I/O ports

13.2.03C Competence

The trainee should have the ability to:

- i) connect I/O devices
- ii) identify I/O ports
- iii) install I/O device drivers

Content

13.2.03T1 I/O device operations

- i) keyboard
- ii) mouse
- iii) visual display unit
- iv) printers

13.2.03T2 I/O ports

- i) serial
- ii) parallel
- iii) USB
- iv) wireless
- v) RJ45

Practice

13.2.03P Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) connect I/O devices
- b) install I/O device drivers

Content

13.2.03P1 Connection of I/O devices

13.2.03P2 Installation of I/O device drivers

Suggested

Teaching/Learning Activities

- Interactive lectures
- Demonstration
- Computer
- Interactive lectures

Suggested

Teaching/Learning Resources

- Textbooks
- Internet
- Computer system
- Whiteboard
- I/O devices

Suggested Evaluation Methods

- Written test
- Assignments
- Practical tests

13.4.04 MOTHERBOARD AND BUSES

Theory

13.2.04T Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) explain motherboard concepts
- b) identify motherboard components
- c) describe computer form factors
- d) identify computer system buses

- e) outline the procedure of installing a computer motherboard

13.2.04C Competence

- The trainee should have the ability to:
- i) identify motherboard components
 - ii) distinguish types of motherboards
 - iii) install motherboard

Content

- 13.2.04T1 Mother board concepts
- i) motherboard
 - ii) daughter board

- 13.2.04T2 Motherboard components
- i) chipsets
 - ii) expansion slots
 - iii) connectors
- 13.2.04T3 Computer form factors
- i) Baby-AT
 - ii) LPX
 - iii) ATX
 - iv) NTX

- 13.2.04T4 Computer system buses
- i) system buses
 - ii) I/O buses

- 13.2.04T5 Motherboard installation

Practice

13.2.04P Specific Objectives

- By the end of the sub-module unit, the trainee should be able to:
- a) distinguish computer form factors
 - b) install a computer motherboard

Content

- 13.2.04P1 Computer form factors
13.2.04P2 Motherboard installation

Suggested Teaching/Learning Activities

- Interactive lectures
- Demonstration
- Computer laboratory
- Group discussion

Suggested Teaching/Learning Resources

- Textbooks
- Internet
- Computer toolbox
- Computer system
- Motherboard
- Whiteboard

Suggested Evaluation Methods

- Practical test
- Assignments
- Written tests

13.2.05 PROCESSORS

Theory

13.2.05T Specific Objectives

- By the end of the sub-module unit, the trainee should be able to:
- a) trace the evolution of processors
 - b) outline processor characteristics
 - c) classify processors
 - d) describe types of processor slots and sockets

13.2.05C Competence

- The trainee should have the ability to
- i) select processors

- ii) identify processor slots and sockets
- iii) install a processor

- Computer laboratory
- Group discussion

Content

- 13.2.05T1 Evolution of processors
- 13.2.05T2 Processors characteristics
 - i) clock speed
 - ii) system bus speed
 - iii) voltage
- 13.2.05T3 Classification of processors
 - i) criteria
 - packaging type
 - manufacturer
 - bus size
 - ii) technology
 - parallel
 - pipelining
 - super scaling
 - hyper threading
- 13.2.05T4 Types of processor slots and sockets

Practice

- 13.2.05P Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

 - a) identify types of processors
 - b) identify types of sockets and slots
 - c) install a processor

Content

- 13.2.05P1 Types of processors
- 13.2.05P2 Processor slots and sockets
- 13.2.05P3 Processor installation

*Suggested
Teaching/Learning
Activities*

- Interactive lectures
- Demonstration

Suggested

Teaching/Learning

Resources

- Textbooks
- Internet
- Computer toolbox
- Computer system

Suggested Evaluation Methods

- Written tests
- Practical tests
- Assignment

13.2.06 MEMORY

Theory

13.2.06T0 *Specific Objectives*

By the end of the sub-module unit, the trainee should be able to:

- a) explain the characteristics of memory
- b) explain types of memories
- c) describe Random Access Memory (RAM) technologies
- d) outline the procedure of upgrading RAM
- e) distinguish between Basic Input Output System (BIOS) hardware and BIOS software
- f) outline the Complementary Metal Oxide Semiconductor (CMOS) settings

13.2.06C Competence

The trainee should have the ability to:

- i) identify types of computer memory
- ii) upgrade computer memory
- iii) set CMOS

Content

- 13.2.06T1 Memory characteristics
 - i) Speed
 - ii) Capacity
- 13.2.06T2 Types of memory
 - i) RAM
 - ii) ROM
- 13.2.06T3 RAM technologies
 - i) SIMM
 - ii) DIMM
 - iii) RIMM
- 13.2.06T4 RAM upgrading
- 13.2.06T5 BIOS hardware and software
- 13.2.06T6 CMOS settings

Practice

- 13.2.06P Specific Objectives
By the end of the sub module unit, the trainee should be able to:
 - a) select RAM modules
 - b) upgrade RAM
 - c) set CMOS

Content

- 13.2.06P1 RAM modules
- 13.2.06P2 Upgrade RAM
- 13.2.06P3 CMOS settings

Suggested Teaching/Learning Activities

- Interactive lectures
- Demonstration
- Computer laboratory

- Group discussion

Suggested Teaching/Learning Resources

- Textbooks
- Internet
- Computer toolbox
- Computer system
- RAM modules
- Whiteboard

Suggested Evaluation Methods

- Practical test
- Assignments
- Written tests

13.2.07 STORAGE

Theory

13.2.07T0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) describe types of disks and disk drives
- b) describe flash memory
- c) explain disk management techniques
- d) compare hard-disk interfaces
- e) describe hard disk partitioning and formatting

13.2.07C Competence

The trainee should have the ability to manage disks

Content

13.2.07T1 Disk types and disk

- drives
 - i) optical
 - ii) magnetic
- 13.2.07T2 Flash memory
- 13.2.07T3 Disk management techniques
 - i) de-fragmentation
 - ii) backup
 - iii) scanning
- 13.2.07T4 Hard disk interfaces
 - i) SCSI
 - ii) IDE hard drive
 - iii) SATA hard drive
- 13.2.07T5 Hard disk partitioning and formatting

Practice

- 13.2.07P *Specific Objectives*
 By the end of the sub module unit, the trainee should be able to:
- a) partition and format a hard disk
 - b) perform disk clean-up
 - c) back up data

Content

- 13.2.07P1 Disk partitioning and formatting
- 13.2.07P2 Disk clean-up
 - i) de-fragmentation
 - ii) scanning
- 13.2.07P3 Data back-up

Suggested Teaching/Learning Activities

- Interactive lectures
- Demonstration
- computer laboratory
- Group discussion

Suggested Teaching/Learning Resources

- Textbooks
- Internet
- Computer toolbox
- Computer system
- Hard disk
- Floppy disk
- Flash disk
- Whiteboard

Suggested Evaluation Methods

- Practical test
- Assignments
- Written tests

13.2.08 POWER SUPPLY

Theory

- 13.2.08T0 *Specific Objectives*
 By the end of the sub-module unit, the trainee should be able to:
- a) outline the importance of power supply
 - b) explain power supply form factors and connectors
 - c) explain power supply problems
 - d) explain the power supply protection devices

- 13.2.08C **Competence**
 The trainee should have the ability to install power supply and protection devices

<i>Content</i>	
13.2.08T1 Importance of power supply	- Computer toolbox
13.2.08T2 Power supply form factors and connectors	- Computer system
13.2.08T3 Power supply problems	- Power supply unit
i) spikes	- Whiteboard
ii) brownouts	
iii) blackouts	
13.2.08T4 Power supply protection devices	
<i>Practice</i>	
13.2.08P Specific Objectives	<i>Suggested Evaluation Methods</i>
By the end of the sub-module unit, the trainee should be able to:	- Practical test
a) identify protection devices	- Assignments
b) connect power-supply and protection devices	- Written tests
c) diagnose power supply problems	
<i>Content</i>	
13.2.08P1 Protection devices	13.2.09 COMPUTER ASSEMBLY AND DISASSEMBLY
13.2.08P2 Power supply	
13.2.08P3 Diagnosis of power supply problems	<i>Theory</i>
<i>Suggested Teaching/Learning Activities</i>	
- Interactive lectures	13.2.09T Specific Objectives
- Demonstration	By the end of the sub-module unit, the trainee should be able to:
- computer laboratory	a) describe hardware inventory
- Group discussion	b) outline computer hardware assembly and disassembly procedures
	c) explain computer upgrading
<i>Suggested Teaching/Learning Resources</i>	13.2.09C Competence
- Textbooks	The trainee should have the ability to:
- Internet	i) assemble and disassemble a computer
	ii) upgrade a computer
	<i>Content</i>
	13.2.09T1 Hardware inventory
	13.2.09T2 Computer hardware assembly and disassembly procedures
	13.2.09T3 Computer Upgrading

<p>Practice</p> <p>13.2.09P <i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to:</p> <ul style="list-style-type: none"> a) prepare computer hardware inventory b) assemble and disassemble a computer c) upgrade a computer <p><i>Content</i></p> <p>13.2.09P1 Hardware inventory 13.2.09P2 Computer assembly and disassembly 13.2.09P3 Computer upgrading</p> <p><i>Suggested Teaching/Learning Activities</i></p> <ul style="list-style-type: none"> - Interactive lectures - Demonstration - Computer laboratory - Group discussion <p><i>Suggested Teaching/Learning Resources</i></p> <ul style="list-style-type: none"> - Textbooks - Internet - Computer toolbox - Computer system - Whiteboard <p><i>Suggested Evaluation Methods</i></p> <ul style="list-style-type: none"> - Practical test - Assignments - Written tests 	<p>13.2.10 SOFTWARE INSTALLATION</p> <p>Theory</p> <p>13.2.10T <i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to:</p> <ul style="list-style-type: none"> a) describe file systems b) outline the procedure of software installation <p>Competence The trainee should have the ability to install software</p> <p><i>Content</i></p> <p>13.2.10T1 File systems</p> <ul style="list-style-type: none"> i) FAT 16 ii) FAT 32 iii) NTFS <p>13.2.10T2 Procedure of software installation</p> <p>Practice</p> <p>13.2.10P <i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to carry-out software installation.</p> <p><i>Content</i></p> <p>13.2.10P1 Software installation</p> <ul style="list-style-type: none"> i) operating systems ii) applications iii) utilities <p><i>Suggested Teaching/Learning Activities</i></p> <ul style="list-style-type: none"> - Interactive lectures - Demonstration
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- Computer laboratory practice
- Group discussion

*Suggested
Teaching/Learning
Resources*

- Textbooks
 - Internet
 - Computer toolbox
 - Computer system
 - Computer software
 - Whiteboard
- Suggested Evaluation Methods*
- Practical test
 - Assignments
 - Written tests

13.2.11 TROUBLESHOOTING

Theory

13.2.11T Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) explain the principles of fault finding
- b) explain computer hardware faults
- c) explain types of computer viruses

13.2.11C Competence

The trainee should have the ability to:

- i) diagnose hardware and software faults
- ii) repair computer hardware and software

Content

13.2.11T1 Fault finding principles

13.2.11T2 Hardware faults

- i) system unit
- ii) keyboard
- iii) monitor
- iv) mouse
- v) printer
- vi) power supply
- vii) storage
- viii) cables
- ix) processors

13.2.11T3 Computer viruses

- i) types
- ii) protection

Practice

13.2.11P Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) apply fault finding principles
- b) detect hardware faults
- c) scan for viruses

Content

13.2.11P1 Fault finding

13.2.11P2 Hardware faults

13.2.11P3 Viruses

*Suggested
Teaching/Learning
Activities*

- Interactive lectures
- Demonstration
- Computer laboratory
- Group discussion

*Suggested
Teaching/Learning
Resources*

- Textbooks

- Internet
 - Computer toolbox
 - Computer system
 - Assorted software programmes
 - Whiteboard
 - Fault diagnosis toolkit
- online
- offline

13.2.12T2 Requirements of user support

13.2.12T3 User training materials

Practice

Suggested Evaluation Methods

- Practical test
- Assignments
- Written tests

13.2.12 COMPUTER USER SUPPORT

Theory

13.2.12T Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) describe types of user support
- b) explain requirements of user support
- c) prepare training materials

13.2.12C Competence

The trainee should have the ability to:

- i) Perform user support service
- ii) Provide information to users

Content

13.2.12T1 Types of user support

- i) quick reference
- ii) tutorial
- iii) help/ explanation facilities

13.2.12P Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) provide user support
- b) prepare training materials
- c) carry-out user training

Content

13.2.12P1 Types of user support

13.2.12P2 Training materials

13.2.12P3 User training

Suggested Teaching/Learning Activities

- Interactive lectures
- Role play

Suggested Teaching/Learning Resources

- Textbook
- E-content
- Internet
- Computer system
- Smart board/ whiteboard
- Multimedia projector

Suggested Evaluation Methods

- Computer laboratory practical
- Written tests

- Assignments
- 13.2.13 ELECTRONIC WASTE MANAGEMENT**
- a) identify electronic waste
 - b) apply electronic waste management procedures

Theory

13.2.13T Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) define electronic waste
- b) classify electronic wastes
- c) explain the effects of electronic waste
- d) describe procedures in electronic waste management

13.2.13C Competence

The trainee should have the ability to:

- i) identify electronic waste
- ii) manage electronic waste

Content

13.2.13T1 Definition of electronic waste

13.2.13T2 Classification of electronic waste

13.2.13T3 Effects of electronic waste

13.2.13T4 Management of electronic waste

Content

13.2.13P1 Electronic waste

13.2.13P2 Management of electronic waste

Suggested

Teaching/Learning Activities

- Interactive lectures
- Case study
- Group discussion
- Field trip

Suggested

Teaching/Learning Resources

- Textbooks
- Internet
- Multimedia projector
- Computer system
- Whiteboard

Suggested Evaluation Methods

- Practical test
- Assignments
- Written tests

Practice

13.2.13P Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

**13.2.14 EMERGING TRENDS
IN COMPUTER
MAINTENANCE AND
SUPPORT**

Theory

13.2.14T Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) identify emerging trends in computer maintenance and support
- b) explain the challenges of emerging trends in computer maintenance and support
- c) cope with challenges of emerging trends in computer maintenance and user support

13.2.14C Competence

The trainee should have the ability to cope with challenges of emerging trends in computer

maintenance and support

Content

13.2.14T1 Emerging trends in computer maintenance and support

13.2.14T2 Challenges of emerging trends in computer maintenance and support

13.2.14T3 Coping with challenges of emerging trends in computer maintenance and support

*Suggested
Teaching/Learning
Activities*

- Interactive lectures
- Case study
- Group discussion

*Suggested
Teaching/Learning
Resources*

- Textbooks
- Internet
- Computer system

*Suggested Evaluation
Methods*

- Practical test
- Assignments
- written tests

14.2.0 COMPUTER APPLICATIONS II

14.2.1 Introduction

This module unit is intended to equip the trainee with knowledge, skills and attitudes that will enable him/her to use Desktop Publishing, Accounting and Computer Aided Design software.

14.2.2 General Objectives

By the end of the module unit, the trainee should be able to:

- a) publish documents using desktop publishing programs
- b) use accounting packages
- c) use computer aided design (CAD)
- d) recognize emerging trends in computer applications

14.2.3 Module Unit Summary and Time Allocation

Code	Sub-module Unit	Content	Total (Hrs)		
			Theory	Practice	Total
14.2.01	Desktop publishing	<ul style="list-style-type: none">• Concepts of desktop publishing• Desktop publishing environment• Text manipulation• Techniques of working with large publication• Manipulation of graphics• Presentation template• Object linking and embedding	12	22	34
14.2.02	Accounting Package	<ul style="list-style-type: none">• Fundamentals of accounting• Fundamentals of stock control and inventory• Fundamentals of banking• Concepts of accounting package• Accounting package environment	20	30	50

Code	Sub-module Unit	Content	Total (Hrs)		
			Theory	Practice	Total
14.2.03	Computer Aided Design (CAD)	<ul style="list-style-type: none"> • Concepts • Fundamentals of technical drawing • CAD environment 	25	35	60
	Emerging Trends in Computer Applications	<ul style="list-style-type: none"> • Emerging trends • Challenges • Coping 	8	0	8
Total			65	87	152

14.2.01 DESKTOP PUBLISHING

Theory

14.2.01T Specific Objectives

By the end of the topic, the trainee should be able to:

- a) explain concepts of desktop publishing
- b) describe desktop publishing environment
- c) explain text manipulation
- d) explain techniques of working with large publication
- e) describe manipulation of graphics
- f) describe presentation template
- g) explain object linking and embedding

14.2.01C Competence

The trainee should have the ability to use desktop publishing to produce publications

Content

- 14.2.01T1 Concepts of desktop publishing**
 - i) definition of terms
 - ii) text based and graphical based programs
 - iii) types of publications
 - iv) applications of desktop publishing
- 14.2.01T2 Desktop publishing environment**
 - i) page layout

- ii) ruler
- iii) tools
- iv) menus

14.2.01T3 Text manipulation

- i) inserting text
- ii) text formatting features
- iii) leading, kerning and tracking
- iv) styling
- v) text alignment
- vi) importing text

14.2.01T4 Publication Layout

- i) master pages
- ii) table of contents
- iii) indexes
- iv) headers and footers
- v) page numbers

14.2.01T5 Manipulation of graphics

- i) types of graphics
- ii) designing graphics
- iii) palettes and patterns
- iv) export and import of graphics

14.2.01T6 Presentation template

- i) define templates
- ii) creating a template
- iii) saving a template
- iv) modifying a template
- v) use a template

14.2.01T7 Object linking and embedding

- i) definition
- ii) linking an object from other applications
- iii) embed and edit an object

Practice

- 14.2.01P *Specific Objectives*
By the end of the sub-module unit, the trainee should be able to:
- a) set page layout
 - b) manipulate text
 - c) manage large publications
 - d) manipulate graphics
 - e) use template
 - f) link and embed objects
- 14.2.01P1 *Content*
Page layout
- i) measurement units
 - ii) margins
 - iii) paper size
 - iv) page Orientation
- 14.2.01P2 Text manipulation
- i) inserting text
 - ii) text formatting features
 - iii) leading, kerning and tracking
 - iv) styling
 - v) text alignment
 - vi) importing text
- 14.2.01P3 Management of large publications
- i) master pages
 - ii) table of contents
 - iii) indexes
 - iv) headers and footers
 - v) page numbers
- 14.2.01P4 Manipulation of graphics
- i) designing graphics
 - ii) inserting graphics
 - iii) palettes and patterns
 - iv) export and import graphics
- 14.2.01P5 Templates

i) creating a template

ii) saving a template

iii) modifying a template

iv) use templates

14.2.01P6 Object linking and embedding

i) linking an object from other applications

ii) embed an object

iii) edit an embedded object

Suggested Teaching/Learning Activities

- Interactive lectures
- Demonstration
- Computer laboratory practical

Suggested Teaching/Learning Resources

- Textbooks
- Multimedia projector
- E-content
- Computer with internet
- DTP software

Suggested Evaluation Methods

- Assignments
- Practical tests
- Written tests

14.2.02 ACCOUNTING PACKAGE

Theory

14.2.02T0 Specific Objectives

By the end of the topic, the trainee should be able to:

- a) explain fundamentals of accounting
- b) describe fundamentals of stock control and inventory
- c) describe fundamentals of banking
- d) explain concepts of accounting package
- e) describe accounting package environment

14.2.02C Competence

The trainee should have the ability to:

- i) use accounting package
- ii) carryout business transactions
- iii) generate financial reports

Content

14.2.02T1 Fundamentals of accounting

- i) definition of terms
- ii) liability, assets and capital
- iii) ledgers
- iv) financial statements
 - balance sheet
 - trial balance
 - profit and loss accounts

14.2.02T2 Fundamentals of stock control and inventory

- i) ordering
- ii) receipt of supply
- iii) invoicing
- iv) receipt of issue stock reports

14.2.02T3 Fundamentals of banking

- i) definition of terms
- ii) customer account
- iii) interest on deposit accounts
- iv) loans and overdrafts
- v) cash transfers
- vi) bank reconciliation

14.2.02T4 Concepts of accounting package.

- i) definition of terms
- ii) accounting programs
- iii) importance of accounting packages

14.2.02T5 Accounting package environment

- i) menus
- ii) toolbars
- iii) settings
- iv) managing windows

Practice

14.2.02P0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) set up a company
- b) set up and manipulate ledgers
- c) manage bank transactions
- d) generate financial reports

Content

14.2.02P1 Setting up a company

- i) company details
- ii) setting up users
- iii) setting tax
- iv) chart of accounts

	v) customers vi) suppliers vii) stock	14.2.03 COMPUTER AIDED DESIGN (CAD)
14.2.02P2	Ledgers i) sales ii) purchase iii) nominal	Theory
14.2.02P3	Management of bank transaction i) deposits ii) withdrawals iii) funds transfer iv) refunds v) cheques vi) bank statements vii) bank reconciliation	14.2.03T <i>Specific Objectives</i> By the end of the topic, the trainee should be able to: a) explain the concepts of Computer Aided Design (CAD) b) explain the fundamentals of technical drawing c) describe CAD environment
14.2.02P4	Financial reports	
	<i>Suggested Teaching/Learning Activities</i> - Interactive lectures - Demonstration - Computer laboratory practical	14.2.03C Competence The trainee should have the ability to use Computer Aided Design program
	<i>Suggested Teaching/Learning Resources</i> - Textbooks - Multimedia projector - e-content - Computer with internet - Accounting software	<i>Content</i> 14.2.03T1 Concepts of Computer Aided Design (CAD) i) definition of Computer Aided Design ii) CAD packages iii) application of CAD systems iv) benefits and limitations
	<i>Suggested Evaluation Methods</i> - Assignments - Practical tests - Written tests	14.2.03T2 Fundamentals of technical drawing i) drawing units ii) types of lines and lettering iii) types of shapes iv) techniques of dimensioning v) plane geometry figures

vi) orthographic views of assembled drawing vii) isometric drawings of objects <ul style="list-style-type: none"> - isometric planes - properties 	<i>Suggested Teaching/Learning Activities</i> <ul style="list-style-type: none"> - Interactive lectures - Demonstration - Computer laboratory practical
14.2.03T3 CAD environment <ul style="list-style-type: none"> i) setting up a drawing ii) specifying co-ordinates iii) types of drawing aids iv) commands 	<i>Suggested Teaching/Learning Resources</i> <ul style="list-style-type: none"> - Textbooks - Multimedia projector - e-content - Computer with internet - CAD software

Practice

14.2.03P0 Specific Objectives By the end of the sub-module unit, the trainee should be able to: <ul style="list-style-type: none"> a) setup CAD environment b) draw objects in two dimension c) draw isometric objects

Content

14.2.03P1 Setting up CAD environment <ul style="list-style-type: none"> i) starting CAD application ii) setting up a drawing iii) using commands
14.2.03P2 Drawing objects in 2-dimension <ul style="list-style-type: none"> i) drawing simple lines ii) drawing curves and objects iii) editing a drawing iv) creating text v) dimensioning vi) hatching vii) fillet and chamfer
14.2.03P3 Isometric objects

<i>Suggested Evaluation Methods</i> <ul style="list-style-type: none"> - Assignments - Practical tests - Written tests

14.2.04 EMERGING TRENDS IN COMPUTER APPLICATION

Theory

14.2.04T Specific Objectives By the end of the topic, the trainee should be able to: <ul style="list-style-type: none"> a) identify emerging trends in computer applications b) explain challenges of emerging trends in computer applications c) cope with challenges of emerging trends in computer applications

14.2.05C Competence

The trainee should have the ability to:

- i) identify emerging trends in computer applications
- ii) cope with challenges of emerging trends in computer applications

Suggested Evaluation Methods

- Assignments
- Written tests

Content

- 14.2.05T1 Emerging trends in computer applications
- 14.2.05T2 Challenges of emerging trends in computer applications
- 14.2.05T3 Coping with challenges of emerging trends in computer applications

Suggested Teaching/Learning Activities

- Interactive lectures
- Discussion

Suggested Teaching/Learning Resources

- Internet

15.2.0 BUSINESS PLAN

15.2.1 Introduction

This sub-module unit is designed to equip the trainee with knowledge, skills and attitudes to enable him/her prepare a business plan.

15.2.2 General Objectives

By the end of the module unit the trainee should be able to:

- a) Show the understanding of the background of intended business
- b) Show the understanding of the market environment of the business
- c) Show the understanding of organisation and management plan
- d) Appreciate operational plan
- e) Prepare financial projections
- f) Prepare a business plan

15.2.3 Module Unit Summary and Time Allocation

Code	Sub-Module Unit	Content	Time (Hrs)		
			Theory	Practice	Total
15.2.01	Introduction to Business Planning	<ul style="list-style-type: none">• Meaning of business plan• Purpose of a business plan• Features of a business plan• Guidelines for developing an effective business plan	4	-	4
15.2.02	Business Description	<ul style="list-style-type: none">• Business name• Business location and address• Form of business ownership• Type of business• Products/ services• Justification of the opportunity• The industry• Business goals and objectives• Entry and growth strategy• SWOT analysis	3	3	6

Code	Sub-Module Unit	Content	Time (Hrs)		
			Theory	Practice	Total
15.2.03	Marketing Plan	<ul style="list-style-type: none"> • Customer identification • Competitor analysis • Market share • Promotion and advertising • Pricing strategy • Sales tactics • Sales target • Distribution strategy • Customer service 	3	3	6
15.2.04	Organization And Management Plan	<ul style="list-style-type: none"> • Organization structure • Management team • Recruitment, training and promotion • Remuneration and incentives • Licenses, permits and other requirements • Supporting services 	3	3	6
15.2.05	Operational/ Production Plan	<ul style="list-style-type: none"> • Production facilities and capacity utilization • Production and operation strategy • Production process • Regulations affecting operations • Operational-time table/production schedule 	3	3	6
15.2.06	Financial Plan	<ul style="list-style-type: none"> • Pre-operations cost • Working capital • Cash flow projections • Pro-forma income statements • Pro-forma balance sheets • Break even analysis • Profitability ratios • Desired financing 	3	3	6

Code	Sub-Module Unit	Content	Time (Hrs)		
			Theory	Practice	Total
		<ul style="list-style-type: none"> • Proposed capitalization • Potential risks 			
15.2.07	Presentation	<ul style="list-style-type: none"> • Business plan writing • Presentation of the business plan 	3	3	6
15.2.08	Emerging Trends	<ul style="list-style-type: none"> • Emerging issues in business planning • Strategies in dealing with emerging issues 	2	2	4
Total Time			24	20	44

	15.2.01	INTRODUCTION TO BUSINESS PLANNING	<i>Content</i>
	15.2.01T0	Theory <i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) Explain the meaning of a business plan b) Explain the purposes of a business plan c) Identify the features of a business plan d) Describe guidelines for developing an effective business plan	15.2.01P1 Features of a business plan 15.2.01P2 Guidelines for developing an effective business plan
	15.2.01C	Competence The trainee should have the ability to identify the features of a business plan	<i>Suggested Teaching and Learning Activities</i> <ul style="list-style-type: none"> - Discussions - Interactive lectures - Resource person <i>Suggested Teaching and Learning Resources</i> <ul style="list-style-type: none"> - Textbooks - Handouts <i>Suggested Evaluation Methods</i> <ul style="list-style-type: none"> - Questions and answers - Written tests - Written examinations
	15.2.01T1	Content Meaning of a business plan	15.2.02
	15.2.01T2	Purposes of a business plan	BUSINESS DESCRIPTION
	15.2.01T3	Features of a business plan	Theory
	15.2.01T4	Guidelines for developing an effective business plan	15.2.02T0 <i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) provide the business name b) describe business location and address c) discuss form of business ownership d) explain the type of business e) describe the products offered f) discuss the justification of opportunity g) describe the industry
		Practice	
	15.2.01P0	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) identify the features of a business plan b) describe guidelines for developing an effective business plan	

- h) explain the goals of business
 - i) explain the entry and growth strategy
 - j) discuss SWOT analysis
- d) describe the products offered

15.2.02C Competence

The trainee should have the ability to:

- i) Create the business name
- ii) Offer products
- iii) Form of business ownership

Content

- 15.2.02T1 Provide the business name
- 15.2.02T2 Business location and address
- 15.2.02T3 Form of business ownership
- 15.2.02T4 Type of business
- 15.2.02T5 Products offered
- 15.2.02T6 Justification of opportunity
- 15.2.02T7 The industry
- 15.2.02T8 The goals of business
- 15.2.02T9 Entry and growth strategy
- 15.2.02T10 SWOT analysis

Practice

- 15.2.02P0 *Specific Objectives*
 By the end of the sub-module unit, the trainee should be able to:
- a) develop business names
 - b) discuss form of business ownership
 - c) explain the type of business

- Content*
- 15.2.02P1 Create the business name
 - 15.2.02P2 Form of business ownership
 - 15.2.02P3 Type of business
 - 15.2.02P4 Products offered

Suggested Teaching and Learning Activities

- Case studies
- Interactive lectures
- Guest speaker
- Discussions

Suggested Teaching and Learning Resources

- Textbooks
- Newspaper cutting(s)
- Training manual
- Handouts
- Magazines

Suggested Evaluation Methods

- Questions and answers
- Written tests
- Written examinations

15.2.03 MARKETING PLAN

Theory

- 15.2.03T0 *Specific Objectives*
 By the end of the sub-module unit, the trainee should be able to:
- a) identify customers
 - b) describe the competitors
 - c) determine the market share

- d) explain the methods of promotion and advertising
- e) explain the pricing strategy
- f) set sales target
- g) describe the sales tactics
- h) describe the distribution strategy
- i) describe the customer service strategy

Practice

15.2.03P0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) identify customers
- b) describe the competitors
- c) determine the methods of promotion and advertising
- d) explain the factors to consider in pricing
- e) identify the sales tactics
- f) describe the distribution strategy
- g) describe the customer service strategy

15.2.03C Competence

The trainee should have the ability to:

- i) Identification of customers
- ii) Promote and advertise for goods and services
- iii) Demonstrate pricing, Sales and distribution tactics
- iv) Take care of customers

Content

- 15.2.03T1 Identification of customers
- 15.2.03T2 Competitors analysis
- 15.2.03T3 Determination the Market share
- 15.2.03T4 Methods of promotion and advertising
- 15.2.03T5 Pricing strategy
- 15.2.03T6 Set sales target
- 15.2.03T7 Sales tactics
- 15.2.03T8 Distribution strategy
- 15.2.03T9 Customer service strategy

Content

- 15.2.03P1 Identification of customers
- 15.2.03P2 Competitors analysis
- 15.2.03P3 Methods of promotion and advertising
- 15.2.03P4 Pricing strategy
- 15.2.03P5 Sales tactics
- 15.2.03P6 Distribution strategy
- 15.2.03P7 Customer service strategy

Suggested Teaching/ Learning Activities

- Discussions
- Case studies
- Interactive lectures
- Field trips
- Guest speaker

	<i>Suggested Teaching and Learning Resources</i>	i) draw organisation structure ii) assemble a the management team iii) develop a management plan
	- Textbooks - Newspaper cutting(s) - Training manual - Handouts - Magazines	
	<i>Suggested Evaluation Methods</i>	
	- Questions and answers - Written tests - Written examinations	
15.2.04	ORGANISATION AND MANAGEMENT PLAN	
	Theory	
15.2.04T0	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) describe the organisation structure b) describe the management team c) identify other business personnel d) explain recruitment, training and promotion of personnel e) discuss remuneration and incentives for personnel f) identify licenses persist and legal requirements g) identify support services	15.2.04T1 Organisation structure 15.2.04T2 Management team 15.2.04T3 Other business personnel 15.2.04T4 Recruitment, training and promotion of personnel 15.2.04T5 Remuneration and incentives for personnel 15.2.04T6 Licenses persist and legal requirements 15.2.04T7 Support services
		Practice
15.2.04P	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) draw organisation structure b) assemble a the management team c) develop a management plan	15.2.04P1 Organisation structure 15.2.04P2 Management team 15.2.04P3 Management plan

		<i>Suggested Teaching and Learning Activities</i>		<i>Content</i>
		- Discussions - Case studies - Lectures - Resource person	15.2.05T1	Production facilities and capacity
		<i>Suggested Teaching and Learning Resources</i>	15.2.05T2	Develop a production and operation strategy
		- Textbooks - Handouts - Training manual	15.2.05T3	Production process of the products
		<i>Suggested Evaluation Methods</i>	15.2.05T4	Regulations affecting operations
		- Written tests - Written examinations - Questions and answers	15.2.05T5	Prepare operation time table/production schedule
	15.2.05	OPERATIONAL AND PRODUCTION PLAN		Practice
	15.2.05T0	Theory <i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) identify production facilities and capacity b) develop a production and operation strategy c) describe the production process of the products d) discuss the regulations affecting operations e) prepare operation time table/production schedule	15.2.05P0	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: a) identify production facilities and capacity b) describe the production process of the products
			15.2.05P1	<i>Content</i> Production facilities and capacity
			15.2.05P2	Production process of the products
	15.2.05C	Competence The trainee should have the ability to identify production facilities and their capacity		<i>Suggested Teaching/ Learning Activities</i> - Case studies - Discussions - Interview - Guest speaker - Interactive lectures

<i>Suggested Teaching/ Learning Resources</i>	ii) Estimate working capital iii) Estimate cash-flow projections iv) Prepare pro-forma income statements v) Prepare pro-forma balance sheets vi) Calculate break-even point vii) Calculate profitability ratios
<i>Suggested Evaluation Methods</i>	- Questions and answers - Written tests - Written examinations

15.2.06 FINANCIAL PLAN

Theory

15.2.06T0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) determine pre-operational costs
- b) estimate working capital
- c) estimate cash-flow projections
- d) prepare pro-forma income statements
- e) prepare pro-forma balance sheets
- f) calculate break-even point
- g) calculate profitability ratios
- h) calculate desired financing
- i) calculate proposed capitalization

15.2.06C Competence

The trainee should have the ability to:

- i) Determine pre-operational costs

Content

- 15.2.06T1 Determination pre-operational plan
- 15.2.06T2 Estimating working capital
- 15.2.06T3 Estimating cash-flow projections
- 15.2.06T4 Preparation pro-forma income statements
- 15.2.06T5 Preparation pro-forma balance sheets
- 15.2.06T6 Calculation break-even point
- 15.2.06T7 Calculation profitability ratios
- 15.2.06T8 Calculate desired financing
- 15.2.06T9 Calcualte proposed capitalization

Practice

15.2.06P0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) determine pre-operational costs
- b) estimate working capital
- c) estimate cash-flow projections
- d) prepare pro-forma income statements

	e) prepare pro-forma balance sheets	15.2.07	PRESENTATION
	f) calculate break-even point		Theory
	g) calculate profitability ratios	15.2.07T0	<i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to:
			a) prepare final business plan b) Make a presentation of the business plan
	<i>Content</i>		
15.2.06P1	Determination pre-operational costs	15.2.07C	Competence
15.2.06P2	Estimating working capital		The trainee should have the ability to write a business plan
15.2.06P3	Estimating cash-flow projections		
15.2.06P4	Preparation pro-forma income statements		
15.2.06P5	Preparation pro-forma balance sheets		
15.2.06P6	Calculation break-even point	15.2.07T1	<i>Content</i>
15.2.06P7	Calculation profitability ratios	15.2.07T2	Writing the final business plan
	<i>Suggested Teaching and Learning Activities</i>		Presentation of the business plan
	- Discussions		
	- Case studies	15.2.07P0	<i>Specific Objectives</i>
	- Interactive lectures		By the end of the sub-module unit, the trainee should be able to:
	- Field trips		a) write a business plan
	- Interview		b) make a presentation of a business plan
	- Guest speaker		
	<i>Suggested Teaching and Learning Resources</i>		
	- Textbooks	15.2.07P1	<i>Content</i>
	- Newspaper cutting(s)	15.2.07P2	Writing a business plan
	- Training manual		Presentation of a business plan
	- Handouts		
	- Magazines		
	<i>Suggested Evaluation Methods</i>		
	- Questions and answers	15.2.07P0	<i>Suggested Teaching and Learning Activities</i>
	- Written tests		- Discussions
	- Written examinations		- Interactive lectures
			- Guest speaker

	<i>Suggested Teaching and Learning Resources</i>	<i>Content</i>
	- Textbooks	15.2.08T1 Emerging trends in business plan
	- Newspaper cutting(s)	15.2.08T2 Challenges posed by the emerging trends and issues
	- Training manual	
	- Handouts	
	- Magazines	15.2.08T3 Ways of coping with challenges
	<i>Suggested Evaluation Methods</i>	
	- Questions and answers	
	- Written tests	
	- Written examinations	
15.2.08	EMERGING TRENDS AND ISSUES	Practice
	Theory	
15.2.08T0	<i>Specific Objectives</i>	15.2.08P0 <i>Specific Objectives</i>
	By the end of the sub-module unit, the trainee should be able to:	By the end of sub-module unit, the trainee should be able to:
	a) identify the emerging trends in business plan	d) identify emerging issues/trends
	b) identify the challenges posed by the emerging trends and issues	e) report on challenges of emerging trends
	c) explain various ways of coping with challenges	f) interpret ways of adapting to the emerging trends
		<i>Content</i>
		15.2.08P1 Identification of Emerging Issues
		15.2.08P2 Reporting on challenges of emerging issues
		15.2.08P2 Interpreting ways of adapting to emerging trends
15.2.08C	Competence	<i>Suggested Learning Resources</i>
	The trainee should have the ability to:-	
	i) Identify emerging issues/trends	- Manuals
	ii) Report on challenges of emerging trends	- Samples
	iii) Interpret ways of adapting to the emerging trends	- Relevant textbooks
		- News papers and magazines
		- Media
		- Internet

16.2.0 RESEARCH METHODOLOGY

16.2.1

Introduction

This module unit is intended to expose the trainee to the practical experiences in research and execution of the research process. The trainee is therefore expected to plan, gather, review and present project materials and information in accordance with given specifications.

16.2.2

General Objectives

By the end of the module unit, the trainee should be able to:

- a) demonstrate an understanding of basic research concepts
- b) demonstrate an understanding of the research process
- c) review literature from various sources indicating proper citation
- d) develop a research design
- e) design appropriate data collection tools
- f) analyze and interpret project data and make conclusions based on the subject matter
- g) develop a research proposal
- h) carry out research, write and present a research report

16.2.3 Module Summary and Time Allocation

Code	Sub-module Unit	Content	Time (Hrs)		
			Theory	Practice	Total
16.2.01	Introduction to Research Methods	<ul style="list-style-type: none">• Definition of research methods• Importance of research in business• Selection of a good research title• Qualities of a good research title• Challenges faced by researchers• Types of research	2	2	4
16.2.02	Research Process	<ul style="list-style-type: none">• Steps in research	2	2	4
16.2.03	Statement of the Problem	<ul style="list-style-type: none">• Meaning of statement of research problem• Techniques of selecting of research problem• Stating a research problem	2	2	4

16.2.04	Literature Review	<ul style="list-style-type: none"> • Meaning • Importance • Sources • Theoretical and empirical literature review • Citation/Referencing 	2	4	6
16.2.05	Research Design	<ul style="list-style-type: none"> • Definition • Need for research design • Types of research design 	2	2	4
16.2.06	Sampling	<ul style="list-style-type: none"> • Meaning • Importance of sampling • Determination of sample size • Sampling techniques 	2	2	4
16.2.07	Sources and Collection of Data	<ul style="list-style-type: none"> • Definition • Sources of data • Types of data • Determining data to be collected • Research instruments 	2	2	4
16.2.08	Research Proposal	<ul style="list-style-type: none"> • Meaning • Identification • Significance of a proposal • Types of proposals • Main components of a research proposal 	3	3	6
16.2.09	Presentation, Analysis and Interpretation of data	<ul style="list-style-type: none"> • Code and edit data • Classify data • Detect errors and omission in data processing • Determine techniques of data processing • Present data in various forms • Perform data analysis • Interpret data • Limitations of data analyzing 	2	4	6

16.2.10	Summary of findings, Conclusions and Recommendations	<ul style="list-style-type: none"> Analyze findings Drawing conclusions Making recommendations 	1	2	3
16.2.11	Report Writing	<ul style="list-style-type: none"> Significance of report writing Types of reports Layout styles Final research report 	2	2	4
16.2.12	Emerging issues and trends in Research Methods	<ul style="list-style-type: none"> Emerging trends and issues and trends in research methods Challenges posed by emerging issues and trends in research methods Coping with challenges posed by emerging issues and trends in research methods 	1	2	3
Total Time			23	27	50

16.2.0 INTRODUCTION TO RESEARCH METHODS

Theory

16.2.01T0 Specific Objectives

By the end of the sub module unit, the trainee should be able to:

- a) define research methods
- b) explain the importance of research methods
- c) select a good research title
- d) identify the qualities of a good title
- e) examine challenges faced by researchers
- f) identify different types of research

16.2.01C Competence

The trainee should have the ability to:

- i) formulate a good research title
- ii) identify different types of research

Content

16.2.01T1 Defining research methods

16.2.01T2 Importance of research methods

16.2.01T3 Selection of a good research title

16.2.01T4 Qualities of a good research title

16.2.01T5 Challenges faced by researchers

16.2.01T6 Types of research

Practice

16.2.01P0 Specific objective

By the end of the sub module unit, the trainee should be able to:

- a) identify different types of research
- b) formulate a good research title

Content

16.2.01P1 Identification of different types of research

16.2.01P2 Research title

*Suggested teaching/
Learning Resources*

- Textbooks
- Training manuals
- Note books
- Marker pens
- Chalk/white boards

*Suggested Teaching/
Learning Activities*

- Discussion
- Role playing
- Question and answer
- Note taking

*Suggested Evaluation
Methods*

- Written tests and examinations
- Practical tests and examinations

16.2.02 RESEARCH PROCESS

Theory

16.2.02T0 Specific Objective

By the end of the sub module unit, the trainee

should be able to describe the research process

- Demonstration
- Question and answer
- Note taking

16.2.02C Competence

The trainee should have the ability to follow the research process

Content

- 16.2.02T1 Research process
- i) problem identification/definition
 - ii) literature review
 - iii) proposal writing
 - iv) research design
 - v) data collection and organization
 - vi) presentation, analysis and interpretation
 - vii) report writing/communication of research findings

Practice

16.2.02P0 Specific objective

By the end of the sub module unit, the trainee should be able to follow the research process

Content

- 16.2.02P1 Research process

Suggested Teaching/Learning Resources

- Text books
- Resource persons
- Training manuals
- Internet
- Research reports

Suggested Teaching/Learning Activities

- Class discussion

Suggested Evaluation Methods

- Written tests
- Assignments

16.2.03 STATEMENT OF THE PROBLEM

Theory

16.2.03T0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) explain the meaning of statement of the problem
- b) identify the techniques of selecting a research problem
- c) state a research problem

16.2.03C Competence

The trainee should have the ability to formulate a research problem

Content

- 16.2.03T1 Statement of the problem

- 16.2.03T2 Techniques of selecting a research problem

- 16.2.03T3 Stating a research problem

Practice

16.2.03P0 Specific objective

By the end of the sub-module unit, the trainee should be able to

formulate a research problem	and empirical literature review
e) review literature with proper citations/referencing	
<i>Content</i>	
16.2.03P1 Research problem formulation	
<i>Suggested Teaching/Learning Resources</i>	
- Text books	
- Training manuals	
- Note books	
- Markers pen	
- Chalk/white boards	
<i>Suggested Teaching/Learning Activities</i>	
- Class discussion	
- Demonstration	
- Question and answer	
- Note taking	
<i>Suggested Evaluation Activities</i>	
- Written tests	
- Assignments	

16.2.04 LITERATURE REVIEW

Theory

16.2.04T0 Specific Objectives	By the end of the sub-module unit, the trainee should be able to:
a) explain the meaning of literature review	
b) describe the importance of literature review	
c) identify various sources of literature	
d) differentiate between theoretical literature	

16.2.04C Competence	The trainee should have the ability to review literature and create proper citations
<i>Content</i>	
16.2.04T1 Meaning of literature review	
16.2.04T2 Importance of literature review	
16.2.04T3 Sources of literature	
16.2.04T4 Theoretical and empirical literature review	
16.2.04T5 Reviewing literature and creating proper citation/referencing	

Practice

16.2.04P0 Specific Objective	By the end of the topic, the trainee should be able to review literature
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16.2.04P1	Reviewing literature and creating proper citations
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<i>Suggested Teaching/Learning Resources</i>	
- Text books	
- Training manuals	
- Note books	
- Markers pen	
- Chalk/white boards	

*Suggested
Teaching/Learning
Activities*

- Class discussion
- Demonstration
- Question and answer
- Note taking

*Suggested Evaluation
Activities*

- Written tests
- Assignments

Practice

16.2.05P0 Specific Objective

By the end of the sub-module unit, the trainee should be able to identify different types of research designs

Content

16.2.05P1 Types of research designs

*Suggested
Teaching/Learning
Resources*

- Text books
 - Training manuals
 - Note books
 - Marker pens
 - Chalk/white boards
- Suggested Teaching/
Learning Activities*
- Class discussion
 - Demonstration
 - Question and answer
 - Note taking

*Suggested Evaluation
Activities*

- Written tests
- Assignments

16.2.05 RESEARCH DESIGN

Theory

16.2.05T0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to:-

- a) define research design
- b) describe the needs for research design
- c) analyze different types of research designs
- d) explain limitations of research design

16.2.05C Competence

The trainee should have the ability to identify appropriate research design

Content

- 16.2.05T1 Definition of research design
- 16.2.05T2 Needs for research design
- 16.2.05T3 Types of research designs
- 16.2.05T4 Limitations of research design

16.2.06 SAMPLING

Theory

16.2.06T0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) explain the meaning of sampling
- b) describe the importance of sampling

- c) identify methods of sampling
- d) describe methods of determining sample size
- e) analyze various sampling techniques

16.2.06C Competence

The trainee should have the ability to:

- i) identify various sampling techniques
- ii) determine appropriate sample size
- iii) apply various sampling techniques

Content

- 16.2.06T1 Meaning
- 16.2.06T2 Importance of sampling
- 16.2.06T3 Methods of determining sample size
- 16.2.06T4 Determining sample size
- 16.2.06 T5 Sampling techniques

Practice

- 16.2.06P0 *Specific Objective*
By the end of the sub-module unit, the trainee should be able to determine a suitable sampling technique

Content

- 16.2.06P1 Sampling techniques

Suggested Teaching/ Learning Resources

- Text books
- Training manuals
- Research persons

Suggested Teaching/ Learning Activities

- Class discussion
- Demonstration
- Question and answer
- Brainstorming

Suggested Evaluation Methods

- Written tests
- Assignments

16.2.07 SOURCES AND COLLECTION OF DATA

Theory

16.2.07T0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) define data
- b) list various sources of data
- c) list various types of data
- d) determine data to be collected
- e) explain methods of data collection
- f) describe the research instruments

16.2.07C Competence

The trainee should have the ability to:

- i) identify different types of data
- ii) apply appropriate data collection method
- iii) determine data to be collected
- iv) design a data collection instrument

<p><i>Content</i></p> <p>16.2.07T1 Definition of data 16.2.07T2 Data sources 16.2.07T3 Types of data <ul style="list-style-type: none"> - primary data - secondary data 16.2.07T4 Determining data to be collected 16.2.07T5 Appropriate methods of data collection 16.2.07T6 Research instruments</p> <p>Practice</p> <p>16.2.07P0 <i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: <ul style="list-style-type: none"> a) identify sources of data b) identify types of data c) determine data to be collected d) design a data collection instrument </p> <p><i>Content</i></p> <p>16.2.07P1 Sources of data 16.2.07P2 Types of data <ul style="list-style-type: none"> i) primary data ii) secondary data 16.2.07P3 Determine data to be collected 16.2.07P4 Designing data collection instruments</p> <p><i>Suggested Teaching/Learning Resources</i></p> <ul style="list-style-type: none"> - Text books - Resource persons - Trade project samples - Training manuals 	<p><i>Suggested Teaching Learning Activities</i></p> <ul style="list-style-type: none"> - Class discussion - Question and answer - Brainstorming <p><i>Suggested Evaluation Methods</i></p> <ul style="list-style-type: none"> - Written tests and examinations - Practical tests and examinations - Assignments - Project work <p>16.2.08 RESEARCH PROPOSAL</p> <p>Theory</p> <p>16.2.08T0 <i>Specific Objectives</i> By the end of the sub-module unit, the trainee should be able to: <ul style="list-style-type: none"> a) explain the meaning of research proposal b) describe an appropriate research title c) explain the significance of a proposal d) distinguish between different types of proposals e) describe the main components of a research proposal </p> <p>16.2.08C Competence The trainee should have the ability to write a research proposal</p>
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<i>Content</i>	
16.2.08T1 Research Proposal definition	- Resource persons - Brainstorming
16.2.08T2 Research title	<i>Suggested Evaluation Activities</i>
16.2.08T3 Significance of a research proposal	- Assignments - Oral tests - Written reports
16.2.08T4 Types of research proposals	
16.2.08T5 Components of a research proposal	16.2.09 PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA
i) preliminaries	
ii) introduction	Theory
iii) statement of the problem	
iv) objectives of the study	16.2.09T0 <i>Specific Objectives</i>
v) research questions	By the end of the sub-module unit, the trainee should be able to:
vi) rationale	a) code and edit
vii) literature review	b) classify data
viii) design and methodology	c) detect errors & omissions in data processing
ix) references	d) determine techniques of data processing
x) appendices	e) present data in various forms
Practice	f) perform data analysis
16.2.08P0 <i>Specific Objective</i>	g) interpret data
By the end of the sub module unit, the trainee should be able to write a research proposal	h) identify limitation of data process
<i>Content</i>	
16.2.08P1 A research proposal	16.2.09C Competence
<i>Suggested Teaching/Learning Resources</i>	The trainee should have the ability to analyse and present data
- Research projects	
- Textbooks	
Internet	<i>Content</i>
<i>Suggested Teaching/Learning Activities</i>	
- Questions and answers	16.2.09T1 Coding and editing data
- Project	16.2.09T2 Data classification
	16.2.09T3 Detecting errors and omission in data processing

- 16.2.09T4 Determining techniques of data processing
- 16.2.09T5 Presenting data in various forms
- 16.2.09T6 Performing data analysis
- 16.2.09T7 Interpreting data
- 16.2.09T8 Limitations of data analyzing

Practice

16.2.09P0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) analyze data
- b) interpret data
- c) present data

Content

- 16.2.09P1 Analysing data
- 16.2.09P2 Interpreting data
- 16.2.09P2 Presenting data

Suggested Teaching/ Learning Resources

- Text books
- Trade project samples
- Research person

Suggested Teaching/ Learning Activities

- Class discussion
- Question and answer
- Project

Suggested Evaluation Methods

- Written tests and examinations
- Practical tests and examinations
- Report

16.2.10 SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

Theory

16.2.10T0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) make a summary of the findings
- b) make a conclusion of the findings
- c) give recommendation based on the findings

16.2.10C Competence

The trainee should have the ability to synthesise findings

Content

16.2.10T1 Research findings summary

16.2.10T2 Research conclusions

16.2.10T3 Giving recommendations based on the findings

Practice

16.2.10P Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

- a) draw conclusions
- b) make recommendations

Content

16.2.10P1 Draw conclusions

16.2.10P2 Make recommendations

Code	Sub-Module Units	Content	Time (Hrs)		
			Theory	Practice	Total
		<ul style="list-style-type: none"> • Methods of data analysis • Procedure in carrying out different types of research projects 			
17.2.04	Data Collection	<ul style="list-style-type: none"> • Primary data • Secondary data 	8	-	8
17.2.05	Presentation,	<ul style="list-style-type: none"> • Presentation 	10	-	10
	Analysis and Interpretation	<ul style="list-style-type: none"> • Analysis • Interpretation 			
17.2.06	Report Writing	<ul style="list-style-type: none"> • Project report writing • Presentation of report 	10	-	10
17.2.07	Emerging issues and trends	<ul style="list-style-type: none"> • Emerging trends and issues in project work • Challenges • Coping with challenges 	2	-	
Total Time			50	-	50

<p>17.2.01 INTRODUCTION TO RESEARCH PROJECT WORK</p> <p>Theory</p> <p>17.2.01T0 <i>Specific Objectives</i> By the end of the topic, the trainee should be able to:</p> <ul style="list-style-type: none"> a) explain the meaning of project work b) explain the importance of a project work c) identify different types of research projects <p>Content</p> <p>17.2.01T1 Meaning of project work 17.2.01T2 Importance of project work 17.2.01T3 Types of projects</p> <p>Practice</p> <p>17.2.01P0 <i>Specific Objective</i> By the end of the topic, the trainee should be able to explain the different types of projects.</p> <p>Content</p> <p>17.2.01P1 Explaining types of projects</p> <p>17.2.01C Competence The trainee should have the to differentiate between types of projects in a firm's project work</p>	<p><i>Suggested Teaching/Learning Activities</i></p> <ul style="list-style-type: none"> - Questions and answers - Note taking <p><i>Suggested Teaching/Learning Resources</i></p> <ul style="list-style-type: none"> - Textbooks - Past written Research projects <p><i>Suggested Evaluation Methods</i></p> <ul style="list-style-type: none"> - Assignments <p>17.2.02 RESEARCH PROJECT PROPOSAL</p> <p>Theory</p> <p>17.2.02T0 <i>Specific Objectives</i> By the end of the topic, the trainee should be able to:</p> <ul style="list-style-type: none"> a) describe the various types of research projects a) explain the importance of a research project proposal b) identify the main factors to consider when selecting a research project c) formulate research project objectives d) prepare a research project proposal <p>Content</p> <p>17.2.02T1 Types of research projects 17.2.02T2 Importance of a research</p>
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	project proposal	<i>Suggested Teaching/Learning Activities</i>
17.2.02T3	Factors to consider in selecting a research project <ul style="list-style-type: none"> i) type of project ii) sources of data iii) quality specifications iv) available technology v) personnel requirements vi) time factor vii) finance available 	<ul style="list-style-type: none"> - Questions and answers - Practice on selected cases - Note taking
17.2.02T4	Formulation of research project objectives	<i>Suggested Teaching/Learning Resources</i>
17.2.02T5	Preparation of a research project proposal <ul style="list-style-type: none"> i) introduction ii) objectives iii) available information (literature review) iv) methodology v) analysis vi) budgeting vii) timing 	<ul style="list-style-type: none"> - Textbooks - Past written Research projects - Guest speakers
		<i>Suggested Evaluation Methods</i>
		<ul style="list-style-type: none"> - Assignments - Written proposals
		17.2.03 METHODOLOGIES
		Theory
17.2.02P0	<i>Specific Objective</i> By the end of the topic, the trainee should be able to distinguish between different types of research projects.	17.2.03T0 <i>Specific Objectives</i> By the end of the topic, the trainee should be able to: <ul style="list-style-type: none"> a) explain how to choose a representative sample of a specified population b) prepare appropriate instruments to collect relevant data c) identify appropriate procedures for carrying out different types of research projects
17.2.02P1	<i>Content</i> Distinguishing types of research projects	<i>Content</i>
17.2.02C	Competence The trainee should have the to prepare a research project proposal	17.2.03T1 Sampling <ul style="list-style-type: none"> i) meaning

- ii) methods of sampling
- 17.2.03T2 Instruments for collecting data
- i) types of instruments
 - ii) industrial and scientific research instruments
 - iii) types of data
- 17.2.03T3 Procedure of carrying out different types of research projects

Suggested Teaching/Learning Resources

- Textbooks
- Past written Research projects
- Guest speakers

Suggested Evaluation Methods

- Assignments
- Written proposals
- Written reports

Practice

17.2.04 DATA COLLECTION

Theory

17.2.04T0 Specific Objectives

By the end of the topic, the trainee should be able to:

- a) identify sources of research data
- b) describe data collection procedures

Content

17.2.04T1 Sources of research data

- i) primary
- ii) secondary

17.2.04T2 Data collection methods/ procedure

- i) desk research methods
- ii) field research methods

Practice

17.2.04P Specific Objectives

By the end of the topic, the trainee should be able to:

17.2.03C Competence

The trainee should have the ability to recommend on the appropriate data collection method.

Suggested Teaching/Learning Activities

- Questions and answers
- Practice on selected cases
- Note taking

	a) explain the choice of different data collection tools b) describe the data collection process	17.2.05	PRESENTATION, ANALYSIS AND INTERPRETATION
	<i>Content</i>	17.2.05T0	<i>Specific Objectives</i>
17.2.04P1	Explaining choice of different data collection tools		By the end of the topic, the trainee should be able to:
17.2.04P2	Describing the process of data collection		<ul style="list-style-type: none"> a) describe the presentation of collected data b) describe the analytical stages involved c) identify the underlying characteristics of analyzed data
17.2.04C Competence	The trainee should have the to collect data for research purposes in an organization		<i>Content</i>
	<i>Suggested Teaching/Learning Activities</i>	17.2.05T1	Data presentation
	<ul style="list-style-type: none"> - Questions and answers - Practice on selected cases - Note taking 		<ul style="list-style-type: none"> i) tabulation ii) graphs and charts iii) curves
	<i>Suggested Teaching/Learning Resources</i>	17.2.05T2	Data analysis
	<ul style="list-style-type: none"> - Textbooks - Data collection tools - Past written Research projects - Guest speakers 		<ul style="list-style-type: none"> i) measures of central tendency ii) measures of dispersion iii) regression and correlation analysis
	<i>Suggested Evaluation Methods</i>	17.2.05T3	Data interpretation
	<ul style="list-style-type: none"> - Assignments - Written proposals - Written reports 		<ul style="list-style-type: none"> i) identifying the typical phenomenon ii) the spread around the typical value iii) relationship between the variables

Practice		17.2.06 REPORT WRITING
17.2.05P0	<i>Specific Objectives</i> By the end of the topic, the trainee should be able to describe the nature of relationship between variables	Theory
17.2.05P1	<i>Content</i> Describing relationships between variables	17.2.06T0 <i>Specific Objectives</i> By the end of the topic, the trainee should be able to: a) write the final report of a project b) make a presentation of a project work
17.2.05C	Competence The trainee should have the ability to present, analyze and interpret collected and analyzed data in an organization	<i>Content</i> 17.2.06T1 Project report writing i) Format ii) Elements
	<i>Suggested Teaching/Learning Activities</i> <ul style="list-style-type: none">- Questions and answers- Practice on selected cases- Note taking- Presentations	17.2.06T2 Presentation of project work <ul style="list-style-type: none">i) order of presentationii) appropriate display methods for final document
	<i>Suggested Teaching/Learning Resources</i> <ul style="list-style-type: none">- Textbooks- Past written Research projects- Guest speakers	Practice
	<i>Suggested Evaluation Methods</i> <ul style="list-style-type: none">- Assignments- Written proposals- Written reports- Presentations	17.2.06P0 <i>Specific Objectives</i> By the end of the topic, the trainee should be able to identify the key stages in report writing
		Content 17.2.06P1 Identifying key stages in report writing
		Competence The trainee should have the ability to write a research project

<i>Suggested Teaching/Learning Activities</i>	emerging trends and issues in project work
- Questions and answers	<i>Content</i>
- Practice on selected cases	17.2.07T1 Emerging trends in project work
- Note taking	17.2.07T2 Challenges posed by emerging trends and issues by project work
- Draft reports	17.2.07T3 Coping with challenges posed by emerging trends and issues in project work
<i>Suggested Teaching/Learning Resources</i>	
- Textbooks	Practice
- Past written Research projects	17.2.07P0 <i>Specific Objective</i> By the end of the topic, the trainee should be able to discuss in groups the challenges posed by emerging trends and issues in Research Project.
- Guest speakers	
- Samples	
- Manuals	
<i>Suggested Evaluation Methods</i>	
- Assignments	17.2.07P1 <i>Content</i> Group discussion on challenges posed by emerging trends and issues
- Written proposals	
- Written reports	
17.2.07 EMERGING ISSUES AND TRENDS IN RESEARCH PROJECT	
Theory	17.2.07C Competence The trainee should have the to cope with emerging trends and issues in Research Projects
17.2.07T0 Specific Objectives By the end of the sub-module unit, the trainee should be able to:	<i>Suggested Teaching/Learning Activities</i>
a) identify the emerging trends in project work	- Questions and answers
b) identify challenges posed by emerging trends and issues in project work	- Practice on selected cases
c) explain various ways of coping with challenges posed by	- Note taking

*Suggested
Teaching/Learning
Resources*

- Textbooks
- Past written Research projects
- Guest speakers

*Suggested Evaluation
Methods*

- Assignments
- Written proposals
- Final Written reports

RECOMMENDED LIST OF EQUIPMENT, TOOLS AND MATERIALS

1. A.C source of power
2. Capacitors
3. Charts
4. Circuit diagrams
5. Computer laboratory
6. Computer system
7. Computer toolbox
8. Connecting wires
9. Diodes
10. Dry cell s
11. Flash disk
12. Floppy disk
13. Hard disk
14. Inductors
15. Internet
16. Journals
17. Manuals
18. Metal conductors
19. Multimedia projector
20. RAM modules
21. Relevant software
22. Research reports
23. Resistors
24. Textbooks
25. Transistors
26. White board/-smart board