NATIONAL COMPETENCY STANDARDS

for

INFORMATION AND COMMUNICATION TECHNOLOGY TECHNICIAN
(Competency Standards Code: K72S004)

National Apprentice & Industrial Training Authority
971, Sri Jayawardenapura Mawatha,
Welikada,
Rajagiriya.

Ministry of Youth Affairs and Skills Development

PREFACE

National Competency Standards (NCS) are an essential element for the implementation of a unified Technical and Vocational Education & Training System for Sri Lanka and forms the basis for the National Vocational Qualification Framework of Sri Lanka, which provides for the award of nationally recognized qualifications. The NCS are developed in consultation with industry and are designed using a nationally agreed specific format to maintain uniformity and consistency of standards amongst occupations.

The NCS specify the standards of performance of a competent worker and the various contexts in which work may take place. NCS also describe the knowledge, skills and attitudes required in a particular occupation. NCS provide explicit advice to assessors and employers regarding the knowledge, skills and attitudes to be demonstrated by the candidates seeking formal recognition for the competencies acquired either following training or through work experience.

NCS focus on what is expected of a worker in the workplace rather than on the learning process.

- NCS stress upon the ability to transfer and apply knowledge and skills to new situations and environments.
- In NCS the emphasis is upon outcomes and upon the application of knowledge and skills, not just the specification of knowledge and skills.
- NSS are concerned with what people are able to do and the ability to do a task in a range of contexts.
- NCS include all aspects of workplace performance and not only narrow task skills.

NCS can serve a number of purposes including:

- Providing advice to curriculum developers about the knowledge, skills and attitudes to be included in the curriculum.
- Providing specifications to Competency Based Assessors about the knowledge, skills and attitudes to be demonstrated by candidates.
- Providing advice to industry about job functions, which in turn can be used for the development of job descriptions, performance appraisal systems and work flow analysis.

The lead organization for the development of NCS is the National Apprentice & Industrial Training Authority. The standards so developed are endorsed by the Tertiary & Vocational Education Commission as National Documents.

There is a requirement to review the standards within the prescribed period as appropriate as and when required, with the assistance of relevant industry groups and incorporate the changes in the National Competency Standards.

Hector Hemachandra
Project Director
Technical Education development
Project

Dr.Thissa Jinasena
Chairman
National Apprentice & Industrial
Training Authority

Dr.T.A.Piyasiri
Director General
Tertiary & Vocational
Education
Commission

ACKNOWLEDGMENT

NATIONAL COMPETENCY STANDARDS FOR INFORMATION AND COMMUNICATION TECHNOLOGY TECHNICIAN (Code No. K72S004)

NATIONAL CERTIFICATE AT NVQ LEVEL 4 IN THE OCCUPATION OF NFORMATION AND COMMUNICATION TECHNOLOGY TECHNICIAN

1. Endorsement date:	2. Date for review:

3. Qualification code:	K72S004Q3L4

4. Development Group and National Industrial Training Advisory Committee :	**Development group** • Mr. J.A.D.J.Jayalath,Director (IS) - Tertiary & Vocational Education Commission. • Mr.S.SenthilKumar, Engineer (IT), Sri Lanka Telecom • Mr.G.M.Sanjeewa Perera, Training officer (IT), VTA • Mr.H.M.A.D.K.Herath, Instructure, IET -NAITA • Mr.D.L.Sudarshan de Silva, Print Care PLC. • Mr. L.S.De Alwis, Former Director (Planning & Development),NAITA • Mr. Carsten Huttemeier, International Consultant, Skills Development Project **NITAC** • Mr.Shantha Fernando, Department of Information Technology, University of Moratuwa • Mr.Kosala Liyanage,Customer Supporting Manager,Metropolitan Computer (Pvt) Ltd. • Mr.Lasantha Samaranayake,Deputy Director (Eng.),EAP Networks (Pvt) Ltd. • Mr.K.H.L.Gunawardena,Managing Director,Raytronic Computers (Pvt) Ltd. • Mr. M.P.B.Fernandez, General Manager, Sri Lanka Telecom • Mr. D.Jayantha.L.Perera, Teletech Electronic Engineering Services, • Mr. Tilina Randeniya,Lecturer,Singapore Informatics Computer Institute • Mr.Shanthi Kumara De Fonseka,Senior Consultant,Arthur C.Clarke Institute for Modern Technologies • Mr.H.L.L.Dhammika, District Factory Inspecting Engineer, Department of Labour. • Mrs.Sepali Rupasinghe,Deputy Director,Department of National Planning • Mr.J.A.D.Jayalath, Director (IT) - TV EC, • Mrs. D.C. Wahalatantri, Director (P&D),NAITA • Mr,Milan Wickramasinghe-Inspector,NAITA

5. Purpose of the qualification	To certify that the holder of this qualification has acquired the competencies contained in the units listed in section 7 below.
6. Regulations for the qualification	The holder should have been assessed by a licensed Assessor and found competent in the units listed in section 7 and certified by the TVEC.
7. Schedule of Units	Unit No. Title K 72S004U01 Use the computer and manage files within standard operating systems K 72S004U02 Perform word processing K 72S004U03 Prepare spreadsheets K 72S004U04 Prepare presentation resources K 72S004U05 Manage databases K 72S004U06 Perform Internet and electronic mail operations K72S004U07 operating Install configure, operate and maintain systems and network services K72S004U08 Develop graphics for web and print products K72S004U09 Analyze, design and develop information system
8. Accreditation requirements	The qualifications shall be offered in compliance with the accreditation requirements of the TVEC as stipulated in the National Vocational Qualifications framework of Sri Lanka.
9. Certification	TVEC shall certify the qualifications in terms of the regulation at section 5 above.
10. Assessment consistency requirements	TVEC responsible for consistency of assessments shall take appropriate steps to ensure consistency of assessments.
11. Transition arrangements	The competency based assessments shall be undertaken by the registered assessors until TVEC arranged to issue licenses to the assessors.
12. Contact for comments	Chairman, National Apprentice & Industrial Training Authority, 971, Sri Jayawardenapura Mawatha, Welikada, Rajagiriya.
13. Prerequisite	The candidate should have been found competent in ''Basic competencies to work '' to be eligible for the award of this qualification.The candidate may concurrently apply for ''Basic Competencies to Work'' and this qualification

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for

INFORMATION AND COMMUNICATION TECHNOLOGY TECHNICIAN
(Competency Standards Code: K72S004)

Packaging for National Vocational Qualifications (NVQ)

- National Certificate at NVQ Level 2 in the occupation of information and Communication Technology Technician will be awarded to those who are competent in units 1+2+6 – K72S004Q1L2

- National Certificate at NVQ Level 3 in the occupation of information and Communication Technology Technician will be awarded to those who are competent in units 1+2+3+4+5+6 – K72S004Q2L3

- National Certificate at NVQ Level 4 in the occupation of information and Communication Technology Technician will be awarded to those who are competent in units 1+2+3+4+5+6+7+8+9 – K72S004Q3L4

UNIT TITLE	Use the computer and manage files within standard operating systems
DESCRIPTOR	This unit covers the competencies required to adjust main settings, use the built-in help features, deal with non-responding applications, operate effectively within the desktop environment, work with desktop icons and windows, manage and organize files and directories/folders, duplicate, copy, move and delete files and directories/folders, and compress and extract files. The use of virus-scanning software, simple editing tools and print management facilities available within the operating system are also included.
CODE	K72S004U01

ELEMENTS OF COMPETENCE	PERFORMANCE CRITERIA
1. Start up and shutdown computer correctly.	1.1 Computer started up in the specified sequence, starting by switching on with the protected power supply.
	1.2 Computer shut down in the specified sequence after terminating the applications in the correct order.
	1.3 Power option properties changed as appropriate
	1.4 Computer restarted using an appropriate routine.
	1.5 A non-responding application terminated as specified.
2. Perform basic information operations	2.1 System information, operating system and version number, available random access memory (RAM), identified.
	2.2 Desktop configuration of the computer; date and time display system, colour settings etc. changed as per standard procedures.
	2.3 Keyboard language set according to given instructions.
	2.4 Removable storage media such as diskettes formatted following standard procedures.
	2.5 Dial up and other user accounts managed as required
	2.6 Application software installed and uninstalled following software developers instructions.
	2.7 Fonts installed following standard procedure.
	2.8 Screen contents pasted into a document using print screen facility.
	2.9 Regional setting changed as appropriate.
	2.10 Help functions used as appropriate.
3. Maintan system using system tools.	3.1 Storage media defragmented as per standard procedure.
	3.2 Error checking of the disk carried out where necessary.
	3.3 Backups taken as required
	3.4 Errors identified by reading interpreting event logs.

ELEMENTS OF COMPETENCE	PERFORMANCE CRITERIA
4. Perform text editing within operating system	4.1 A text editing application launched, a file opened, a new file created, named and placed as required.
	4.2 File saved to a given location on a given drive and named as required.
	4.3 Text editing application closed following standard procedure.
5. Work with Icons on Desktop	5.1 Desktop icons identified selected and moved as required.
	5.2 File,directory / folder,applications opened from the desktop.
	5.3 Desktop icon/s and menu shortcut created as required.
6. Work with windows	6.1 Window minimized, expanded, resized, moved and closed by clicking on the appropriate symbols available on the tool bars.
	6.2 Tiling, cascading and splitting windows, and switching between different open windows, performed as required.
7. Manage files and folders	7.1 Usage of hierarchy of drives, folders, sub-folders and files in a hierarchical structure demonstrated.
	7.2 A directory / folder and sub-folder, created in storage devices as required.
	7.3 Common file types such as word processing files, spreadsheet files, data base files, presentation files, image files, audio, video and PDF files recognized and explained.
	7.4 Various types of CD/DVD (Data,video,Audio,Mixed burned) using standard procedure.
	7.5 File and folder attributes such as archive, read-only, etc. changed appropriately.
	7.6 Selection of files / folders either individually or as adjacent or non-adjacent groups, renaming,coping and moving of files / folders performed as required.
	7.7 Deletion and recovery of files / folders to and from recycle bin / waste basket performed as required.
	7.8 Files / folders searched using find / search tool, by content, date modified, wildcards.
	7.9 Files compressed and extracted as required, following standard procedures.
8. Manage antivirus softwere.	8.1 Antivirus software settings adjusted as required.
	8.2 Specified drives, folders and files scanned using current version of a virus scanning applications.
	8.3 Scanning software / virus definition updated regularly.

ELEMENTS OF COMPETENCE	PERFORMANCE CRITERIA
9. Manage printer and printer setting.	9.1 Printer installed on computer according to manufacturer's instructions.
	9.2 Document printed from an application.
	9.3 Print paused, re-started or cancelled using the print manager.

RANGE STATEMENT

Work outlined in this unit may be carried out in an office environment or in a computer laboratory using standard operating system

The following equipment/tools shall be available:

- Standard operation system
- Anti-Virus software on CD
- Scanner
- CD/DVD writer and burning application. applications.
- External storage media

- Printer and print drivers.
- Personal computer able to process standard operating systems with required drivers
  - Software

ASSESSMENT GUIDE

Form of assessment

Continuous assessment or summative assessment is suitable for this unit.

Assessment Context

This unit maybe assessed on the job, off the job or in a combination of both demonstrated by an individual working alone.

Critical Aspects

- Ability to operate a computer with standard operating system.
- Ability to perform all file / folder and print management functions using the operating system

Resources required for assessment include; material and equipment listed within this unit.

Assessment Conditions

- The candidate will have access to; all equipment, material and documentation required.
- The candidate will be permitted to refer any relevant drawings.
- The candidate will be required to;
    - orally or by other method of communication answer questions asked by the assessor.
    - identify superiors who can be approached for collection of competency evidence where appropriate.
- Assessors must be satisfied that the candidate can competently and consistently perform all elements

Special Notes

During assessment, the candidate will;

- Demonstrate safe work practices at all times,
- Communicate information about processes, events or tasks being undertaken, to ensure a safe and efficient working environment,
- Take responsibility for the quality of his/her own work,
- Plan tasks in all situations and review task requirements as appropriate,
- Perform tasks in all situations and review task requirements as appropriate,

UNDErPINNING KNoWIEDGE	UNDErPINNING SKIIIS
• English literacy.	• Ability to connect relevant external parts / peripherals of computers.
• Basic knowledge of computer configurations and operations, main components of computers, their functions and mode of operations.	• Ability to use mouse and keyboard
• Standard operating systems.	
• Basic knowledge of computer viruses and spyware other harmful application (malware) and common methods of protection.	
• Knowledge of file management.	

UNIT TITLE	**Perform Word Processing**
DESCRIPTOR	This unit covers the competencies required to use a word processing application in a computer, create, format and print documents containing text, tables, graphics and pictures, and use special features such as "mail merge"
CODE	**K72S004U02**

ELEMENTS OF COMPETENCE	PERFORMANCE CRITERIA
1. Use a word processing application	1.1 Saved documents opened and closed as appropriate. 1.2 New documents created, based on the default template and some other available template. 1.3 Document saved to a given location under its existing name or a new name with or without password as required. 1.4 Document saved in an available file format such as rich text format, HTML, template, software specific file extension. 1.5 HELP functions used as appropriate.
2. Perform adjustment of word processor settings	2.1 Switching between different view modes and zooming performed as required. 2.2 Display /hiding of toolbars ruler and non-printing characters demonstrated correctly. 2.3 Basic options / preferences in the application such as file security user information, default file location modified as required. 2.4 Auto correction options used as required.
3. Perform word processing operations	3.1 Text typed, special characters, Auto text entries and symbols inserted as required. 3.2 A single character, word, line, sentence, paragraph or entire body of text selected as required. 3.3 Content edited as required by inserting new characters/words into existing text, replacing existing text and using undo / redo functions. 3.4 Text copied as required within a document or between documents. 3.5 Text moved as required within a document or between documents, and unnecessary text deleted. 3.6 Words and / or phrases replaced as required, using the search and replace commands.
4. Format text	4.1 Text appearance changed as required by changing font types and sizes, and text formatted as bold, italic, underlined etc.

ELEMENTS OF COMPETENCE	PERFORMANCE CRITERIA
4. Cont.	4.2 Text formatted as subscript, superscript character spacing etc, and case changed as required.
	4.3 Text colour changed as required and particular styles and formatting transferred from one piece of text to another.
5. Format a paragraph	5.1 Paragraph marks and line break marks inserted and removed as required.
	5.2 Text aligned left, centre, right or justified and left, right, first line, or hanging indents applied as required.
	5.3 Line spacing within paragraphs and spacing above and below paragraphs changed as required.
	5.4 Left, centre, right and decimal tabs set and removed as required.
	5.5 Different styles of bullets and numbers applied to or removed from single and multiple level lists as required.
	5.6 Borders and shading added to a paragraph as required.
6. Format a document	6.1 Different number of columns applied to the document as required.
	6.2 Document orientation, paper size, and margins changed as required
	6.3 Page break inserted and deleted as required.
	6.4 Header & footer functions and text added & removed as required.
	6.5 Automatic page numbering applied to a document in the required format.
	6.6 Page borders inserted and removed as appropriate.
7. Create and format tables in a document	7.1 Table created, data inserted and edited as required.
	7.2 Rows, columns, cells or the entire table selected, inserted or deleted, column width and row height modified as required.
	7.3 Cells merged and splited as required.
	7.4 Cell border width, style, color modified and shading added to cells as required.
	7.5 Table properties applied as required.
	7.6 Data sorted and formula used for calculations as required.
8. Insert objects and link in to a document	8.1 Picture / image and chart inserted or linked into a document using Object Linking and Embedding (OLE) tools, selected and duplicated within the document as required.
	8.2 Picture, an image and a chart moved within a document and into another document as required.

ELEMENTS OF COMPETENCE	PERFORMANCE CRITERIA
8. Cont.	8.3 A picture, an image and a chart resized and deleted as required.
	8.4 Auto shape, word art,text boxes applied and multiple objects managed (group,order,align etc.) as required.
	8.5 Text wrapping applied as required.
9. Carryout mail merging of a document	9.1 Mailing list or other data file prepared for mail merge.
	9.2 Main document prepared for mail merge by inserting data fields as required.
	9.3 Data source merged with a main document such as a letter so that multiple copies are obtained correctly.
10. Prepare final document for printing	10.1 Document proofed by checking layout, presentation, spelling etc. so that a correct final document is obtained.
	10.2 Spelling and grammatical errors corrected using spell-check function.
	10.3 Commonly used words added to a custom dictionary to facilitate spell checking on future occasions
	10.4 Document previewed using the preview function in order to identify formatting errors etc.
	11.1 Suitable print options such as entire document, a selected section, specified pages, multiple copies etc. selected as required.
	11.2 Document printed from an appropriate printer using the required options.

RANGE STATEMENT

The work outlined in this unit shall be demonstrated individually in an office environment or in a computer laboratory, and shall include all those competencies required to word process a document and use the functions available in standard word processing software.

The following equipment shall be available:

- Computer with standard operating system and word process application
- Printer

Materials and consumables to be available

- Paper / print media
- Printing cartridge for printer

ASSESSMENT GUIDE

Form of assessment

Continuous assessment or a summative assessment is suitable for this unit.

Assessment Context

This unit may be assessed on the job, off the job or in a combination of both demonstrated by an individual working alone.

Critical Aspects

- Ability to perform all word processing functions.

Assessment Conditions

- The candidate will have access to; all equipment, material and documentation required.
- The candidate will be permitted to refer any relevant drawings.
- The candidate will be required to;
    - orally or by other method of communication answer questions asked by the assessor.
    - identify superiors who can be approached for collection of competency evidence where appropriate.
- Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by criteria and that he/she possesses the required underpinning knowledge.

Special Notes

During assessment, the candidate will;

- Demonstrate safe work practices at all times,
- Communicate information about processes, events or tasks being undertaken, to ensure a safe and efficient working environment,
- Take responsibility for the quality of his/her own work,
- Plan tasks in all situations and review task requirements as appropriate,
- Perform tasks in all situations and review task requirements as appropriate,

Resources required for assessment include; material, tools, equipment and machines listed within this unit.

UNDErPINNING KNoWlEDGE

- English literacy.
- Knowledge of basic word processing
- Knowledge on finding similar words
- Knowledge on default setting

UNDErPINNING SKIllS

- Ability to use a computer and perform file management functions
- Ability to use the different functions available   in standard word processing applications
- Ability to use find and replaces features when working with different languages (Sinhala / Tamil)
- Ability to apply default setting for most frequently used formats.
- Ability to maintain general speed typing

UNIT TITLE	Prepare Spreadsheets
DESCRIPTOR	This unit covers the competencies required to work with standard spreadsheet programs, to prepare a new spreadsheet, format as required, change cell properties as required, enter and manipulate data, import and export data, set up simple formulae to perform calculations,create charts,simple data base management and obtain printouts of spreadsheets.
CODE	K72S004U03

ELEMENTS OF COMPETENCE	PERFORMANCE CRITERIA
1. Perform basic spreadsheet operations	1.1 A spreadsheet application opened and closed properly.
	1.2 Several spreadsheets opened simultaneously.
	1.3 A new spreadsheet created using the default template.
	1.4 A spreadsheet saved to a given location on a drive.
	1.5 A spreadsheet saved to a given location under another name.
	1.6 A spreadsheet saved as another file type such as a text file, HTML, template, software specific file extension.
	1.7 Switching between worksheets and between open spreadsheets performed as required.
	1.8 HELP functions used as required.
2. Adjust settings	2.1 Magnification /zoom tools used as required.
	2.2 Built in toolbars displayed/hidden as required.
	2.3 Row and / or column titles frozen / unfrozen as required.
	2.4 Basic options / preferences such as user name, default directory / folder modified as required.
3. Insert data	3.1 A number, a date / time, and text entered in cell/s.
4. Select cells, raws and column	4.1 A single cell, a range of adjacent cells, a range of non-adjacent cells, entire worksheet selected as required.
	4.2 A single row, a range of adjacent rows, a range of non-adjacent rows selected as required.
	4.3 A single column, a range of adjacent columns, range of non-adjacent columns selected as required.
5. Insert/delete rows and columns	5.1 Rows and columns inserted in worksheet at the required place.
	5.2 Rows and columns deleted without affecting the rest of the worksheet.
	6.1 Cell contents edited as required.

ELEMENTS OF COMPETENCE	PERFORMANCE CRITERIA
	6.2 Undo / redo commands used as required.
6. Cont.	
7. Copy, move and delete	7.1 The contents of a cell, a cell range within a worksheet, copied between worksheets and other open spreadsheets.
	7.2 Transpose applied while copying the data as required.
	7.3 Data copied and incremented using the auto fill and copy handle tools.
	7.4 The contents of a cell, cell range, moved within the worksheet, between worksheets and between open spreadsheets.
	7.5 Cell contents deleted without affecting other cells.
8. Search and replace cell content	8.1 Specific content in a worksheet located using the search command.
	8.2 Specific content in a worksheet replaced using the replace command.
9. Sort data	9.1 A cell range sorted according to criterion in ascending / descending numerical and alphabetical order.
10. Handle worksheets	10.1 New worksheet inserted renamed moved, copied and deleted as required.
	10.2 Multiple work sheet selected as required.
	10.3 Worksheet protected as required.
11. Use arithmetic Formulae and functions.	11.1 Relative, mixed, absolute, cell referencing in formulae carried out as required.
	11.2 Formulae generated using cell references and arithmetic operators and considering error values associated with formulae.
	11.3 Formulae generated using sum, average, minimum, maximum, count functions.
	11.4 Formulae generated using the logical function IF, yielding two specific values.
12. Format cells	12.1 Cells formatted to display number to a specific number currency, data and percentages
	12.2 Cell content properties , font colour, font sizes, font styles, background formatted as required,
	12.3 Formatting copied from a cell or cell range to another cell or cell range as required.
	12.4 Text wrapping applied , multiple lines inserted to cell contents as required.
	12.5 Contents aligned orientation adjusted as required.
	12.6 Border effects added to a cell or cell range as required.

ELEMENTS OF COMPETENCE	PERFORMANCE CRITERIA
13. Use charts / graphs	13.1 Different types of charts/graphs such as column, bar, line, pie, created from spreadsheet data as required.
	13.2 Titles / labels added / removed to /from a chart / graph as required.
	13.3 The background colour and colours of chart/graph changed as required.
	13.4 The chart / graph type changed as required.
	13.5 Charts / graphs copied / moved / re sized and deleted within a worksheet, between worksheets and between open spreadsheets as required.
14. Setup worksheet	14.1 Worksheet margins, orientation, paper size, page fit, changed as required.
	14.2 Page breaks applied as necessary.
	14.3 Header & footer properties changed as required
	14.4 Print order adjusted as required.
15. Prepare and print spreadsheet	15.1 Spreadsheet calculation and text checked before printing to detect errors.
	15.2 A worksheet previewed to check formatting etc before numbering.
	15.3 Display of grid lines, display of row and column headings etc. turned off prior to printing as required.
	15.4 Automatic title row printing on every page applied as required.
	15.5 A cell range from a worksheet or entire worksheet, the entire spreadsheet, or a selected chart printed as required.
16. Import / Export data	16.1 Data imported & formatted from other (worksheet and file) formats as required.
	16.2 Data exported to other formats as required

RANGE STATEMENT

The work outlined in this unit shall be demonstrated individually in an office environment or in a computer laboratory, and shall include all those competencies required to originate and edit spreadsheets, enter data and process data using the functions available in standard spreadsheet applications.

The following equipment shall be available:

- Personal computer with standard operating system and relevant applications software.
- Printer

Materials and consumables to be available

- Paper
- Printing cartridge for printer

ASSESSMENT GUIDE

Form of assessment

Continuous assessment or a summative assessment is suitable for this unit.

Assessment Context

This unit may be assessed on the job, off the job or in a combination of both demonstrated by an individual working alone.

Critical Aspects

- Ability to insert data in appropriate format and cell formatting
- Ability to perform calculation using formulae & functions accurately.

Assessment Conditions

- The candidate will have access to; all equipment, material and documentation required.
- The candidate will be permitted to refer any relevant drawings.
- The candidate will be required to;
    - orally or by other method of communication answer questions asked by the assessor.
    - identify superiors who can be approached for collection of competency evidence where appropriate.
- Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by criteria and that he/she possesses the required underpinning knowledge.

Special Notes

During assessment, the candidate will;

- Demonstrate safe work practices at all times,
- Communicate information about processes, events or tasks being undertaken, to ensure a safe and efficient working environment,
- Take responsibility for the quality of his/her own work,
- Plan tasks in all situations and review task requirements as appropriate,
- Perform tasks in all situations and review task requirements as appropriate,

Resources required for assessment include: material and equipment listed within this unit.

UNDErPINNING KNoWlEDGE	UNDErPINNING SKIllS
- English literacy. - Basic knowledge of computer configuration and operations, main components of computers, their functions and mode of operations. - Standard operating systems. - Basic knowledge of computer viruses and spyware other harmful applications (malware) and common methods of protection. - Knowledge of file management. - knowledge of basic spreadsheet operations. - Knowledge in arithmetic and logical operations	- Ability to connect relevant external parts and peripherals of a computer. - Ability to power on and boot up a computer - Create a new spreadsheet, open a saved spreadsheet, enter and manipulate data and format as required. - Change cell properties in the spreadsheet, setup formulas and perform calculations. - Take print outs of part or whole of a spreadsheet. - Ability to protect range of cell - Ability to open and import text files.

UNIT TITLE	Prepare presentation resources
DESCRIPTOR	This unit covers the competencies required to create, format and modify presentations using different slide layouts, animations and other features, for display and printed distribution.
CODE	K72S004U04

ELEMENTS OF COMPETENCE	PERFORMANCE CRITERIA
1. Perform basic operations with presentations	1.1 Presentation application opened and closed properly. 1.2 Several presentations opened simultaneously. 1.3 New presentation created using the default template. 1.4 Presentation saved to a specified location on a drive. 1.5 Presentation saved under another name. 1.6 File saved under a different file format such as Rich Text, template, image file format, software specific etc.
2. Adjust settings	2.1 Magnification / zoom tools used as required. 2.2 Built in toolbars displayed / hidden as required. 2.3 Basic options / preferences in the application such as user name, default directory / folder changed as required.
3. Change views	3.1 Different presentation view modes used to suit the presentation. 3.2 Presentation view modes changed from one to another as required.
4. Add slides	4.1 New slide with a specific layout such as title, chart, text, bulleted list, table, added. 4.2 Changing from one slide layout to another carried out with out affecting the contents. 4.3 Background colour on all slides and specific slides changed as required.
5. Use design templates	5.1 Available design template applied correctly to a presentation. 5.2 Changing between available design templates carried out as required.
	6.1 Picture, image, drawing object inserted/removed, into /from a slide without affecting the other contents. 6.2 Text added into footer of specific slides/all slides as required. 6.3 Automatic slide numbering, automatic insertion of updated/non updated date into footer of specific slide / all slides applied.

ELEMENTS OF COMPETENCE	PERFORMANCE CRITERIA	
7. Format text input	7.1	Text added into a presentation in standard / outline view as required.
	7.2	Slide contents and notes page contents edited by inserting new characters /words as required.
	7.3	Text appearance, font type, font size, font colour, shading font style, changed as required.
	7.4	Case changes applied to text as required.
	7.5	Text aligned left, centre, right, in a slide as required.
	7.6	Line spacing before and after bulleted or numbered points adjusted as required.
	7.7	The style of bulleted or numbered lists changed as required.
8. Insert multimedia objects	8.1	A picture / image inserted into a slide at the required place.
	8.2	Picture and image resized and edited as required.
	8.3	Object Linking and Embedding (OLE) inserted as required
9. Copy, move and delete text,pictures and images	9.1	Text, pictures, images copied moved within a presentation and between presentations as required.
	9.2	Text, pictures and images, resized and deleted as required.
10. Use charts and graphs	10.1	Different types of charts and graphs created and modified in a slide as required (column, bar, line, pie).
	10.2	Background and colours of a chart / graph changed as required.
	10.3	Chart / graph type changed as required.
11. Create organization Charts	11.1	Organization chart with a labeled hierarchy created using built in organization chart feature as required.
	11.2	Hierarchical structure of an organization chart changed as required.
	11.3	Positions at different levels added / removed to / from an organization chart as required.
12. Insert drawing objects into slides	12.1	Different types of drawing objects inserted into a slide as required.
	12.2	Drawing object background colour, line colour, line thickness, line style,arrow style,connecters changed as required.
	12.3	Shading applied to a drawing object as required.
	12.4	Drawing object rotated / flipped as required.
	12.5	Drawing object aligned as required.
	12.6	Drawing object / chart resized as required.

ELEMENTS OF COMPETENCE	PERFORMANCE CRITERIA
12.Cont.	12.7 Order of object changed as required.
13. Insert links	13.1 Hyperlink inserted (URL or book mark) as required
	13.2 Action buttons inserted as required.
14. Apply slide show effects, animation	14.1 Custom animation effects, timing applied to slide objects as required
	14.2 Transition effects between slides and advanced timing changed as required.
	14.3 Presentation time recorded as required.
15. Prepare for presentation and/or printing	15.1 Output format for presentations such as overhead, handout, 35 mm slides on screen show selected as appropriate.
	15.2 Presentation spell checked in order to correct spelling errors and delete repeated words.
	15.3 Notes for the presenter added to slide as required.
	15.4 Slide setup, orientation, paper size, changed as required.
	15.5 Slide copied and moved within a presentation and between presentations as required.
	15.6 An entire presentation, specific slides, handouts, note pages, outline viewed of slides, printed as required.
	15.7 A slide show presented starting from the beginning or an intermediate point as required.
	15.8 Presentation packaged to run without presentation software as required

RANGE STATEMENT

The work outlined in this unit shall be demonstrated individually in an office environment or in a computer laboratory and shall include all those competencies required to prepare, edit, format and preview presentations using standard presentation applications.

Eloboration of terms in performance criteria 8.3
οbjects may include

- Sounds, movie clips, animate clips , charts.

The following equipment shall be available:

- Multimedia capable computer
- Printer
- Scanner
- Micro phone

Materials and consumables to be available

- Paper
- Printing cartridge for printer

ASSESSMENT GUIDE

Form of assessment

Continuous assessment or a summative assessment is suitable for this unit.

Assessment Context

This unit may be assessed on the job, off the job or in a combination of both demonstrated by an individual working alone.

Critical Aspects

- Ability to perform all presentation functions included in this unit.

Assessment Conditions

- The candidate will have access to; all equipment, material and documentation required.
- The candidate will be permitted to refer any relevant drawings.
- The candidate will be required to;
    - orally or by other method of communication answer questions asked by the assessor.
    - identify superiors who can be approached for collection of competency evidence where appropriate.
- Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by criteria and that he/she possesses the required underpinning knowledge.

Special Notes

During assessment, the candidate will;

- Demonstrate safe work practices at all times,
- Communicate information about processes, events or tasks being undertaken, to ensure a safe and efficient working environment,
- Take responsibility for the quality of his/her own work,
- Plan tasks in all situations and review task requirements as appropriate,
- Perform tasks in all situations and review task requirements as appropriate,

Resources required for assessment include: material and equipment listed within this unit.

UNDErPINNING KNoWlEDGE

- English literacy.
- Basic knowledge of computer configuration and operations, main components of computers, their functions and mode of operations.
- Standard operating systems.
- Basic knowledge of computer viruses and spy ware and common methods of protection.
- Knowledge of file management.
- Knowledge of features available in standard presentation applications.
- Knowledge of effective presenta tion techniques.

UNDErPINNING SKIllS

- Ability to connect relevant external parts and peripherals of a computer.
- Ability to power on and boot up a computer
- Ability to perform basic operations on a computer, manage files etc.

UNIT TITLE	Manage databases
DESCRIPTOR	This unit covers the competencies required to create and use a database on a computer, insert, edit, process and extract data as required, generate reports in different formats incorporating different items of data and information
CODE	**K72S004U05**

ELEMENTS OF COMPETENCE	PERFORMANCE CRITERIA
1. Perform basic operations	1.1 A database application opened and closed properly.
	1.2 An existing database opened correctly.
	1.3 A new database created as required.
	1.4 A new database saved to a specified location on a drive.
	1.5 HELP functions used as required.
	1.6 Database closed properly.
	1.7 Backups creacted as required.
2. Adjust settings	2.1 View modes changed in a table, form, report as required.
	2.2 Built in toolbars displayed / hidden as required.
3. Create and design table	3.1 Table created and saved with fields and their data types.
	3.2 Field format attributes such as field size, number format, date format changed as required.
	3.3 A simple validation rule for number, text, date / time , currency, created.
	3.4 Field inserted to the table structure as required.
4. Define key	4.1 A primary key defined as appropriate.
	4.2 A field indexed with / without duplicates as required.
5. Perform main operations.	5.1 Records added to or deleted from a table as required
	5.2 Data added to a record and modified as required.
	5.3 Data in records deleted as required.
	5.4 The undo command used as required.
	5.5 Navigation carried out within a table to next record, previous record, first record, last record, specific record, as required.
	5.6 A table deleted as required.
	5.7 A table saved and closed.
	5.8 Table imported from data base or application as required

ELEMENTS OF COMPETENCE	PERFORMANCE CRITERIA	
6. Create table relationships	6.1	One to one and one to many relationship between tables created.
	6.2	Relationship between tables deleted as required.
	6.3	Rules applied to relationships such that fields that join tables are not deleted as long as links to another table exist.
7. Format text input	7.1	Form created, opened and saved as required.
	7.2	Form used to enter, modify and delete records as required.
	7.3	Navigation to next record, previous record, first record, last record, specific record carried out using FORM DISPLAY.
	7.4	Text in headers / footers in a form added to or modified as required.
	7.5	Forms deleted as required.
	7.6	Forms saved and closed correctly.
8. Perform filter operations	8.1	Search command used for a specific word, number, date in a field as required.
	8.2	Filter applied to a table, form, as required.
	8.3	Filter removed from a table, form, as required.
9. Create Queries	9.1	Single table query, two table query, created as required.
	9.2	Criteria added to a query using any of the standard operations < (Less than),<=(Less than or equal to), > (greater than), >=(greater than or equal to), = (equal), <> (not equal to), correctly.
	9.3	A query edited by adding or removing criteria as required.
	9.4	A query edited by adding, removing, moving, hiding and unhiding fields.
	9.5	Calculated fields added to the query as required.
	9.6	Update query, delete query, append query created as required.
	9.7	A query run deleted , updated, saved and closed as appropriate.
10. Sort records	10.1	Data sorted in a table, form, query output in ascending /descending numerical / alphabetical order as required.
11. Work with reports	11.1	A report based on a table, query, created and saved as required.
	11.2	The arrangement of data fields and headings within a report layout changed as required.
	11.3	Data under a specific heading (field) in a report grouped in ascending/descending order as required.
	11.4	Specific fields in a grouped report presented by sum, minimum, maximum, average, count, at appropriate break points.

ELEMENTS OF COMPETENCE	PERFORMANCE CRITERIA
11. Cont.	11.5 Text in headers, footers in a report added or modified as necessary.
	11.6 A report deleted correctly.
	11.7 A report saved and closed correctly.
	12.1 A table, forms, reports, previewed to ensure that errors are detected and corrected.
	12.2 Report orientation, paper size, changed as required.
	12.3 The results of a query printed as required.
	12.4 Specific pages in a report or a complete report printed as required.

RANGE STATEMENT

The work outlined in this unit shall be demonstrated individually in an office environment or in a computer laboratory and shall include all the competencies required to originate, update and maintain a database in a computer, and extract data and information as required, using standard operationg system.

The following equipment shall be available:

- Computer with standard operating system and data base application.
- Printer

Materials and consumables to be available

- Paper / print media
- Printing cartridge for printer

ASSESSMENT GUIDE

Form of assessment

Continuous assessment or a summative assessment is suitable for this unit.

Assessment Context

This unit may be assessed on the job, off the job or in a combination of both demonstrated by an individual working alone.

Critical Aspects

- Design and create data base
- Create queries and reports

Assessment Conditions

- The candidate will have access to; all equipment, material and documentation required.
- The candidate will be permitted to refer any relevant drawings.
- The candidate will be required to;
    - orally or by other method of communication answer questions asked by the assessor.
    - identify superiors who can be approached for collection of competency evidence where appropriate.
- Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by criteria and that he/she possesses the required underpinning knowledge.

Special Notes

During assessment, the candidate will;

- Demonstrate safe work practices at all times,
- Communicate information about processes, events or tasks being undertaken, to ensure a safe and efficient working environment,
- Take responsibility for the quality of his/her own work,
- Plan tasks in all situations and review task requirements as appropriate,
- Perform tasks in all situations and review task requirements as appropriate,

Resources required for assessment include: material and equipment listed within this unit.

UNDErPINNING KNoWlEDGE

- English literacy.
- Basic knowledge of computer configuration and operations, main components of computers, their functions and mode of operations.
- Standard operating systems.
- Basic knowledge of computer viruses and spyware and common methods of protection.
- Knowledge of file management.
- Basic knowledge of databases and how they are structured.
- Knowledge of the principle features of database applications.

UNDErPINNING SKIllS

- Ability to connect relevant external parts and peripherals of a computer.
- Ability to power on and started up a computer
- Create a new database, open a saved database, enter and manipulate data and format as required.
- Generate reports as required from the information contained in the database.
- Take printouts of part or whole of a report.

UNIT TITLE	**Perform Internet and Electronic mail operations**
DESCRIPTOR	This unit covers the competencies required to access the internet, browse the world wide web using a web browser application carry out a search operation using any popular search engine, bookmark websites, print web pages and search outputs. It also covers the competencies required to send and receive electronic mail, using an e-mail application to attach files to mail messages and use some of the standard measures for protection against e-mail borne viruses.
CODE	**K72S004U06**

ELEMENTS OF COMPETENCE	PERFORMANCE CRITERIA
1. Configure browser to specific internet options.	1.1 Security level adjusted as appropriate. 1.2 Active , components, scripting , child lock images enabled or disabled as necessary. 1.3 Offline contents managed as necessary.
2. Perform basic browser operations and settings	2.1 Web browsing applications opened and closed as required. 2.2 Web browser default home page changed as required. 2.3 Web page displayed in a new window as described. 2.4 Web page stopped from downloading and / or refreshed as necessary. 2.5 Hyperlink/ image activated as required. 2.6 Navigation backwards and forwards between previously visited Web pages carried out as required. 2.7 Web – based form completed and information entered in order to carry out a transaction. 2.8 Previously visited web sites displayed as required using the browser address bar. 2.9 Browsing history deleted to remove list of visited sites.
3. Use and organize bookmarks	3.1 Bookmark created and displayed according to the specifications of the browser. 3.2 Bookmark folder created according to browser specifications. 3.3 Web pages added to a bookmark folder according to the browser specification. 3.4 Bookmark deleted as required according to the browser specification.
4. Use a search engine	4.1 Search for specific information carried out using a keyword/phrase. 4.2 Selection criteria combined as required in a search. 4.3 Text, images, URL copied from a web page to a document as required.

ELEMENTS OF COMPETENCE	PERFORMANCE CRITERIA
4. Cont	4.4 A web page saved to a location on a drive as a test file and a HTML file, as required.
	4.5 A text file, an image file, a sound file, video file and application software downloaded from a web page.
5. Prepare for printing	5.1 A web page previewed correctly.
	5.2 Web page orientation, paper size changed as required.
	5.3 Web page margins, left, right, top, bottom changed as required.
	5.4 Web page printed out using options such s specific pages, specific frame, selected text or entire page as required.
6. Basic E-mail	6.1 An e-mail application opened and closed.
	6.2 A mailbox of a specific user opened.
	6.3 Several e-mail messages opened.
	6.4 Switching between several open e-mail messages demonstrated.
	6.5 An e-mail message closed.
	6.6 The use of available HELP functions demonstrated.
	6.7 A message flagged / unflagged as required.
	6.8 A message marked as read / unread as appropriate.
	6.9 A file attachment opened and saved to a specified location as required.
	6.10 The use of the reply / reply to all function demonstrated correctly.
	6.11 The use of the reply with /without original message insertion demonstrated correctly.
	6.12 A new message created as required.
	6.13 A mail address inserted correctly in the "To" field.
	6.14 Other addresses inserted correctly in the cc (copy), bcc (blind copy) fields.
	6.15 A title inserted correctly in the "Subject" field.
	6.16 Spelling errors, duplicated words etc. corrected using a spell checking tool if available.
	6.17 A file attached to a message as required.
	6.18 Use of the high / low priority function demonstrated correctly.
	6.19 A message sent using a distribution list as required.
	6.20 A message forwarded correctly.

ELEMENTS OF COMPETENCE	PERFORMANCE CRITERIA
6. cont.	6.21 Text copied / moved within a message or between messages as required.
	6.22 Text copied into a message from another source as required.
	6.23 Text in a message deleted as required.
	6.24 A file attachment deleted from an outgoing message as required.
7. Configure mail account settings.	7.1 User details configured according to user name and e-mail addresses.
	7.2 Incoming and outgoing main servers configured according to the Internet service providers settings.
	7.3 Mail account settings customized as appropriate.
8. Manage mail	8.1 Mail management techniques such as creating folders, moving messages to appropriate folders etc. carried out according to internet service provider setting.
	8.2 A new address / distribution list created correctly.
	8.3 A mail address added correctly to an address list.
	8.4 A mail address deleted from an address list as required.
	8.5 An address book updated from incoming mail as required.
	8.6 A search for a message carried out by sender, subject, mail content as required.
	8.7 A new folder for mail created correctly.
	8.8 Messages moved correctly to a new mail folder.
	8.9 Messages sorted by name / date as required.
	8.10 A message deleted as required.
	8.11 A message restored from the deleted items folder as required.
	8.12 The deleted items folder emptied correctly.
	8.13 A message previewed as required before printing.
	8.14 A message printed using an option such as entire message, selection, number of copies, as required.

RANGE STATEMENT

The work outlined in this unit shall be demonstrated individually in an office environment or in a computer laboratory and shall include all the competencies required to use electronic mail and the internet efficiently and safely.

The following equipment shall be available:

- Personal computer able to process standard operating system and standard Internet browser, and E-mail applications with an active Internet connection.
- Printer

Materials and consumables to be available

- Paper
- Printing cartridge for printer

ASSESSMENT GUIDE

Form of assessment

Continuous assessment or a summative assessment is suitable for this unit.

Assessment Context

This unit may be assessed on the job, off the job or in a combination of both demonstrated by an individual working alone.

Critical Aspects

- Configure E-mali & Internet account.

Assessment Conditions

- The candidate will have access to; all equipment, material and documentation required.
- The candidate will be permitted to refer any relevant drawings.
- The candidate will be required to;
  - orally or by other method of communication answer questions asked by the assessor.
  - identify superiors who can be approached for collection of competency evidence where appropriate.
- Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by criteria and that he/she possesses the required underpinning knowledge.

Special Notes

During assessment, the candidate will;

- Demonstrate safe work practices at all times,
- Communicate information about processes, events or tasks being undertaken, to ensure a safe and efficient working environment,
- Take responsibility for the quality of his/her own work,
- Plan tasks in all situations and review task requirements as appropriate,
- Perform tasks in all situations and review task requirements as appropriate,

Resources required for assessment include: material and equipment listed within this unit.

UNDErPINNING KNoWlEDGE

- English literacy.
- Basic knowledge of computer configuration and operations, main components of computers, their functions and mode of operations.
- Popular operating systems.
- Basic knowledge of computer viruses and spy ware, malware phishing and common methods of protection.
- Knowledge of file management.

UNDErPINNING SKIllS

- Ability to connect relevant external parts and peripherals of a computer.
- Ability to power on and boot up a computer
- Ability to access the internet, browse the world wide web and acquire information, and use an electronic mail facility to send and receive e-mail messages.
- Ability to create internet connection (Dial Up.Broadband)

UNDErPINNING KNoWlEDGE

- Knowledge of the Internet, the worldwide web and techniques of access through suitable software.
- Basic concepts and Items of the Internet
- Knowledge of Internet security procedures.
- Knowledge of instant messaging and video conferencing.
- Knowledge on send server SMS using.

UNIT TITLE	**Install configure, operate and maintain operating systems and network services**
DESCRIPTOR	This unit covers the competencies required to install, configure and maintain operating systems, application packages. In addition this unit covers network devices and services provision of maintenance support and user training.
CODE	**K72S004U07**

ELEMENTS OF COMPETENCE	PERFORMANCE CRITERIA	
1. Install and configure operating systems and application softwear.	1.1	Power switched on and basic input output setup configured
	1.2	Hard disk partitioned according to the requirement and operating system installed
	1.3	Software for devices installed as necessary
	1.4	Application software installed and configured according to user requirement
2. Configure network devices and services	2.1	Network devices configured to ensure optimum network performance
	2.2	Host configured to ensure that all points of the network functioning correctly
	2.3 services	Network resources sharing facilitated to provide network Connectivity and performance tested to ensure optimum performance
	2.4	Network configuration documented as per organizational standards
3. Provide operations and maintenance support	3.1	User satisfaction and efficient services ensured by responding promptly
	3.2	Operating systems & network errors detected and rectified for standard performance
	3.3	Faulty components replaced or upgraded as required
	3.4	Problems beyond scope reported to authorized officer as per standar procedure
	3.5	Preventive maintenance activities performed according to organizational procedures and guidelines.
	3.6	Records of maintenance requests/related issues maintained according organizational procedures
4. Train users	4.1	Basic user training provided for network usage as per organizational requirements

RANGE STATEMENT

Work may take place in a small and medium office environment with LAN

The following tools, equipment and material may be used for this unit:

- LAN Cable tester
- Crimping tool
- RJ 45 Connectors
- Network switch
- Network diagnostic tools
- Procedure manual

- Network cable
- Wall outlets
- Wireless access equipment
- Patch panels
- Operation system software
- Technical documentation

ASSESSMENT GUIDE

Form of assessment

Continuous assessment or a summative assessment is suitable for this unit.

Assessment Context

This unit may be assessed on the job, off the job or in a combination of both demonstrated by an individual
working alone.

Critical Aspects

- Troubleshooting of operating system and network

Assessment Conditions

- The candidate will have access to; all equipment, material and documentation required.
- The candidate will be permitted to refer any relevant drawings.
- The candidate will be required to;
  – orally or by other method of communication answer questions asked by the assessor.
  – identify superiors who can be approached for collection of competency evidence where appropriate.
- Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by criteria and that he/she possesses the required underpinning knowledge.

Special Notes

During assessment, the candidate will;

- Demonstrate safe work practices at all times,
- Communicate information about processes, events or tasks being undertaken, to ensure a safe and efficient working environment,
- Take responsibility for the quality of his/her own work,
- Plan tasks in all situations and review task requirements as appropriate,
- Perform tasks in all situations and review task requirements as appropriate,

UNDErPINNING KNoWlEDGE	UNDErPINNING SKIllS
• Basic Networking principles.	• Communication skills
• Operating systems Principles	• Following safety procedures
• Knowledge of safety (Personal & equipment)	• Cabling skills
• Cabling standards	• Read and interpret technical documents

UNIT TITLE	**Develop Graphics for web and print product**
DESCRIPTOR	This unit covers competencies required to develop images and graphics for web pages and print documents ensuring safe working at all times
CODE	**K72S005U08**

ELEMENTS OF COMPETENCE	PERFORMANCE CRITERIA
1. Create graphics for given design	1.1 Images, logos and illustrations gathered prepared as required for the design and suitability for reproduction ensured.
	1.2 Suitable scanner to scan images and illustrations selected and scanned according to required resolutions and size
	1.3 Illustrations/graphics created as required
	1.4 Images/graphics saved in a separate folder in appropriate file format according to organizational guide lines to be retrieved in due process
2. Manage images and graphics	2.1 Scanned images retrieved, tonal corrected & image optimized according to the print/web design and output requirement.
	2.2 Images cropped according to required dimensions
	2.3 Image masks prepared as required by design.
	2.4 Images saved in a separate folder in appropriate file format according to organizational guidelines to be retrieved in due process
	2.5 Web banner created as per requirement.
	2.6 Page layout components such as buttons, menus, logos, image maps created as required.
3. Animate images and graphics for web contents and presentations.	3.1 Images and graphics selected as per the requirement.
	3.2 Movement plan created as required.
4. Develop web site and include images and graphics in web pages.	3.3 Pictures and graphics animated as required.
	4.1 Information collected for web design as required.
	4.2 Web template selected as per the requirement.
	4.3 Text, images and colours added as required.

RANGE STATEMENT

Work may take place in a small office environment or training center

The following tools, equipment and material may be used for this unit:

- Graphic design software
- Scanner
- Portable storage media - CD/DVD/USB flash drive SD memory
- Animation software

- PC with standard operating system
- Digital camera
- Printer (colour)
- Web design software

Form of assessment

Continuous assessment or a summative assessment is suitable for this unit.

Assessment Context

This unit may be assessed on the job, off the job or in a combination of both demonstrated by an individual
working alone.

Critical Aspects

- Develop graphics using graphic design software
- Animate graphics

Assessment Conditions

- The candidate will have access to; all equipment, material and documentation required.
- The candidate will be permitted to refer any relevant drawings.
- The candidate will be required to;
    - orally or by other method of communication answer questions asked by the assessor.
    - identify superiors who can be approached for collection of competency evidence where appropriate.
- Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by criteria and that he/she possesses the required underpinning knowledge.

Special Notes

During assessment, the candidate will;

- Demonstrate safe work practices at all times,
- Communicate information about processes, events or tasks being undertaken, to ensure a safe   and efficient working environment,
- Take responsibility for the quality of his/her own work,
- Plan tasks in all situations and review task requirements as appropriate,
- Perform tasks in all situations and review task requirements as appropriate,

Resources required for assessment include: material and equipment listed within this unit.

UNDErPINNING KNoWℓEDGE

- Fundamentals of graphic design
- Computer hardware operating system and application software
- Principles of animations
- File types
- Storage types

UNDErPINNING SKIℓℓS

- Basic computer skills
- Skills in handling digital camera, scanner, printer etc
- Communication skills
- Esthetic and creative skills

UNIT TITLE	**Analyze ,design and develop information system**
DESCRIPTOR	This unit covers the competencies in gathering and analyzing requirements, design,develop, test, implement and document basic information system
CODE	**K72S005U09**

ELEMENTS OF COMPETENCE		PERFORMANCE CRITERIA
1. Gather requirements for basic information system	1.1	Sources of information identified and selected as per customer requirements
	1.2	Software Requirement Specification (SRS) documented as per organizational standards
	1.3	Test plan prepared as per requirement specification
2. Analyze requirement	2.1	Processes, order and relationships identified as per Software Requirement Specification
	2.2	System analyzed as per organizational requirements for software solution
3. Design System	3.1	Design diagrams developed as per organizational standards.
	3.2	Flow diagrams and pseudo codes developed as per requirement specification
	3.3	Interfaces designed as per requirement.specification
4. Develop system	4.1	Program codes written as per the selected programming language and organizational standards.
	4.2	Databases connected as per design documentation
	4.3	Program codes tested as per test plan
	4.4	Software installed and customised as per Software Requirement Specification(SRS).
	4.5	User aceptance obtained as per ogranizational standard

RANGE STATEMENT

Work may take place in a small scale in-house development environment training center with computer laboratory facility Work may include analyze, design and develop basic information system for individual or small and medium scale usage

The following tools, equipment and material may be used for this unit:

- Computer with standard operating system
- Software development packages and tools

Form of assessment

Continuous assessment or a summative assessment is suitable for this unit.

Assessment Context

This unit may be assessed on the job, off the job or in a combination of both demonstrated by an individual
working alone.

Critical Aspects

- analyze and design system

Assessment Conditions

- The candidate will have access to; all equipment, material and documentation required.
- The candidate will be permitted to refer any relevant drawings.
- The candidate will be required to;
  – orally or by other method of communication answer questions asked by the assessor.
  – identify superiors who can be approached for collection of competency evidence where appropriate.
- Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by criteria and that he/she possesses the required underpinning knowledge.

Special Notes

During assessment, the candidate will;

- Demonstrate safe work practices at all times,
- Communicate information about processes, events or tasks being undertaken, to ensure a safe and efficient working environment,
- Take responsibility for the quality of his/her own work,
- Plan tasks in all situations and review task requirements as appropriate,
- Perform tasks in all situations and review task requirements as appropriate,

Resources required for assessment include: material and equipment listed within this unit.

UNDErPINNING KNoWIEDGE

- Basic IT
- Fundamentals of programming
- Object oriented concepts
- System development methodologies
- Basic database concepts

UNDErPINNING SKIIIS

- Basic computer Skills
- Communication Skills
- Programming language skills
- Documentation skills

University of Vocational Technology

INFORMATION AND COMMUNICATION TECHNOLOGY TECHNICIAN

CURRICULUM OUTLINE

Validated by
The National Industrial Training Advisory Committee
on
24th February 2012

Developed   by

Curriculum Development Unit

University of Vocational Technology

No: 100, Kandawala Road, Ratmalana

2012

CONTENTS

INTRODUCTION

This is the steering curriculum document prepared for conducting competency based training.

This document takes someone through a quick walk over the contents of the training programme.

The complete curriculum package of the competency based training programme consists of two other documents, namely the "Trainer's Guide" and the "Learner's Guide"

A page or two has been set off in this document to provide details of each module constituting the programme.

Following details in respect of each module are included here.

- Tasks included in the module.
- Standards to be achieved in performing the same.
- Related knowledge required to perform these tasks.
- Tools, machinery equipment and learning and teaching aids required to complete the module.
- Target time for completion of the module.

Further, this document would provide an idea as to the number of training modules prepared for this trade and whether it would be possible to conduct a CBT programme in any given center.

Curriculum Development Division
University of Vocational Technology
No. 100, Kandawala Road, Rathmalana

CONTRIBUTIONS FOR THE DEVELOPMENT OF THIS CURRICULUM

Resource persons who provided occupational information at the Task Analysis Workshops

Mr. J.A.D.J. Jayalath	Director (Information Systems) Tertiary and Vocational Education Commission Nipunatha Piyasa Narahenpita
Mr. Tharaka Soysa	Freelance Consultant / Trainer - Web Technology
Ms. W.R. Rohini Chandralatha	Senior Instructor National IT Centre, Vocational Training Authority Narahenpita
Mr. Ashoka Bandula	Lecturer (Information Technology) University of Vocational Technology Ratmalana
Mr. A.M.G. Seneviratne	Lecturer (Information Technology) College of Technology Maradana

Task Analysis Workshops

1. **Workshop Facilitators**

   Mr. D.D. Wijesinghe   Dean
                                   Faculty of Industrial & Vocational Technology
                                   University of Vocational Technology

2. **Workshop Coordinator**

   Ms. Malkanthi Thenabadu   Lecturer
                                   University of Vocational Technology

3. **Curriculum Writer**

   Ms. Malkanthi Thenabadu   Lecturer
                                   University of Vocational Technology

4. **Computer Type Setter**

   Ms. Kumari Swarnalatha   Management Assistant
                                   University of Vocational Technology

5. **Consultancy and direction for Curriculum Development**

   Mr. D.D. Wijesinghe   Dean
                                   Faculty of Industrial & Vocational Technology
                                   University of Vocational Technology

Validated by National Industrial and Training Advisory Committee

Members

Mr. D.L.J. Perera	Managing Director, Teletech Electronic Engineering Services, Colombo.
Mr. Lasantha Samaranayaka	Manager (IT Television)/Deputy Director(Eng.), EAP Network (Pvt) Ltd.
Mr. S. Senthil Kumara	Manager, Operator service, Sri Lanka Telecom
Mr. Priyantha Weerabahu	Education programme manager, Intel, Colombo.
Mr. Ajith Gunawardena	Training Manager, Vocational Training authority, Skills development secretariat, Nipunatha Piyasa.
Mr. Vajira Perara	Director (NVQ), TVEC, Nipunatha Piyasa.
Mr. Tharaka Soysa	Director Academic- Knowledge City Company, Consultant /Trainer Web Technology
Ms. W.R. Rohini Chandralatha	Senior Instructor (Informational Technology), National IT Centre.
Ms. T.K. Malwatta	Senior Lecturer, UNIVOTEC
Ms. M.Thenabadu	Lecturer, UNIVOTEC

Facilitator

Mrs. M.P.Theja Malkanthi	Training Officer(CuD) National Apprentice and Industrial Training Authority

Coordinator

Ms. Nishanthi Gunasekara	Inspector, National Apprentice and Industrial Training Authority

OCCUPATIONAL OUTLOOK

ICT being the technology enabler for automation and various applications, plays an important role in the world today. Qualified human resource is a requirement to design, develop and implement ICT systems in business and other work environments.

ICT is an attractive area for labour market and demand increases exponentially for qualified ICT professionals. ICT Technician is supposed to be a multiskill technician in the area of ICT and deliver competencies according to the requirements in the small and medium scale business entities.

ICT Technician is responsible for varying computer related duties depending on their specific job title and place of employment. In general, ICT Technician is capable of processing word documents, processing spreadsheets, prepare presentations, design and maintain databases, handle e mail and internet related duties, develop graphic and web resources, attend to install and troubleshooting of simple networks and design information systems in a small scale.

ICT technician occupation will be demanded and vacancies will be created in both local and foreign job market with good career prospects.

COMPETENCY PROFILE

COMPETENCY AREA   **COMPETENCIES**

A **Maintain files & folders**	**A1.** Start up and turn off the computer	**A2.** Customize computer and desktop settings	**A3.** Create folders and files	**A4.** Perform Folder/File operations	**A5.** Set attributes of files folders	**A6.** Compress and extract folder/ files
	A7. Backup and restore folders/ files					
B **Perform word processing**	**B1.** Create different types of documents using templates	**B2.** Create tables	**B3.** Add objects and special formatting	**B4.** Format paragraph/docu ment	**B5.** Create links	**B6.** Create mail merge
	B7. Create templates/cover page	**B8.** Find & replace text	**B9.** Draw graphics/auto text	**B10.** Create Table of Content(Index)	**B11.** Print a word document/envelo ps/labels	
C **Prepare spread sheet**	**C1.** Format work sheet	**C2.** Apply built – in functions and formulas	**C3.** Fill ,Sort and Filter data	**C4.** Prepare graphs and charts	**C5.** Use data tools	**C6.** Create a pivot table
	C7. Develop and customize worksheet	**C8.** Set Page properties and Print a spread sheet				
D **Prepare presentations**	**D1.** Creating a presentation	**D2.** Apply design templates to an existing presentation	**D3.** Insert different media	**D4.** Slide transition and animation	**D5.** Insert action buttons and hyperlinks	**D6.** Conduct the presentation
	D7. Print slides					

E Maintain databases	**E1.** Create tables	**E2.** Create table relationship	**E3.** Modify tables	**E4.** Create forms	**E5.** Create queries	**E6.** generate reports
	E7. Modify records	**E8.** Backup and restore data	**E9.** Link data base with external document			
F Perform internet and electronic mail operations	**F1.** Perform Browser operations	**F2.** Use Search engines	**F3.** Download and upload file	**F4.** Perform e mail operations	**F5.** Print e mails/web pages	
G Install and configure operating system (commercial and open source)	**G1.** Check hardware compatibility with operating system	**G2.** Prepare the computer for installation	**G3.** Install the operating system	**G4.** Install device drivers	**G5.** Install application software	**G6.** Ensure standard performance
H Conduct installation and troubleshooting of network from client PC	**H1.** Identify network hardware	**H2.** Add client computer to the network	**H3.** Install / configure network resources to the client PC	**H4.** Verify proper functioning of network services	**H5.** Troubleshoot network resources and services	**H6.** Instruct & Demonstrate Users
J Develop graphics for web/ print media	**J1.** Select graphics formats for web	**J2.** Create graphics for web	**J3.** Select graphics formats for printing	**J4.** Create graphics for printing	**J5.** Scan documents	
K Design & Develop Static web pages	**K1.** Identify web site requirement	**K2.** Develop web page layout	**K3.** Embed different media to web page			
L Develop basic software solution	**L1.** Identify software solution requirement	**L2.** Prepare system diagrams and algorithm	**L3.** Develop coding and connect database	**L4.** Packaging, implementation of software solution		

PROGRAMME STRUCTURE

	COMPETENCY AREA	MODULE NO.	MODULE TITLE	COMPETENCIES							Institutional Theory	Institutional Practical	Industrial
A	Maintain files & folders	M-01	Maintain files & folders	A1	A2	A3	A4	A5	A6	A7	18	25	20
B	Perform word processing	M-02	Perform word processing	B1	B2	B3	B4	B5	B6		36	36	80
				B7	B8	B9	B10	B11					
C	Prepare spread sheet	M-03	Prepare spread sheet	C1	C2	C3	C4	C5	C6	C7	C8	40	42	80
D	Prepare presentations	M-04	Prepare presentations	D1	D2	D3	D4	D5	D6	D7	15	20	50
E	Maintain databases	M-05	Maintain databases	E1	E2	E3	E4	E5			48	48	80
				E6	E7	E8	E9						
F	Perform internet and electronic mail operations	M-06	Perform internet and electronic mail operations	F1	F2	F3	F4	F5			16	16	50
G	Install and configure operating system (commercial and open source)	M-07	Install and configure operating system	G1	G2	G3	G4	G5	G6		20	30	50
H	Conduct installation and troubleshooting of network from client PC	M-08	Conduct installation and troubleshooting of network from client PC	H1	H2	H3	H4	H5	H6		15	20	20
J	Develop graphics for web / print media	M-09	Develop graphics for web / print media	J1	J2	J3	J4				20	40	50
K	Design and Develop Static web pages	M-10	Design and Develop Static web pages	K1	K2	K3					20	40	75
L	Develop basic software solution	M-11	Develop basic software solution	L1	L2	L3	L4				75	80	165

Total no. of Hours — Theory: **323**, Practical: **397** (Institutional **720**); Industrial: **720**

Note: 165 hrs. allocated for M-11 under the industrial training can be utilized for project work
The Project work may include development of basic software system in group basis.

Module Code	:	**M-01**
Approved on	:	
To be revised on	:	

Occupation : Information and Communication Technology Technician

Competency Area : Maintain files & folders

Module Title : Maintain files & folders

Performance Objective: After completion of this module the trainee will be able to perform each of the tasks mentioned here according to the relevant standards.

Tasks to be performed:

Task No.	Task	Standards
A1	Start up and turn off the computer	• Computer should be started up in the specified sequence. • It should be ensured that all peripheral devices are connected and in working condition. • It should be ensured that the desktop environment is completely loaded. • It should be ensured that before turning-off the computer, all the opened, used and non-responding applications are closed, following the specified procedure.
A2	Customize computer and desktop settings	• System information, operating system and version number, available random access memory (RAM) should be obtained. • Colour settings should be applied for optimal view as per the standard procedure. • User account should be created with a strong password and according to the requirement. • Regional settings should be selected according to the country requirements. • Desktop should be organized / customized to maximize the user and computer efficiency.
A3	Create folders and files	• Folder / file name should be meaningful and created according to the requirement. • File / folder should be saved in the given location.
A4	Perform Folder / File operations	• The specified folder/file should be selected / saved / moved / copied to the required destination. • It should be ensured that the specified folder / file is deleted and recovered from the recycle bin as required.

Task No.	Task	Standards
A5	Set attributes of files folders	• Folder / file attributes should be changed to suit the status of the file / folder.
A6	Compress and extract folder / files	• Folder / files should be compressed and extracted as per the requirement following the standard procedure.
A7	Backup and restore folders / files	• Backed up files should be created as per the standard procedure and able to restore to the original status.

Related Knowledge:

- Basic knowledge of computer configurations, main components of computers their functions and operations
- Standard operating systems
- System information (system properties, device manager, storage etc)
- Window operations (minimize, expand, resize, tile, split, switching between different windows)
- Power option properties
- Organize desktop to maximize user and computer efficiency
- Different methods of Open/copy/move/Delete /select folders or files
- Folder and File naming rules, Type of file and folder attributes
- Select multiple files/folders
- Close applications which is open/used/non responding
- Type of deletion (temporary, permanent)
- Restoring folders/files from recycle bin
  Use of password and password characteristics
- Refer help functions
- UNICODE fonts
- Key board shortcuts
- Location of backup utility (OS dependant)
- Selection of backup tools
- Backup and restore procedure
- Type of Compression software (WinZip/Winrar/7zip)
- Different Compression types

Prerequisites: Basic English and Mathematics

Materials, Tools & Equipment Required:

Powered computer system, standard operating system software, software applications, and instructions to perform operations

Target Time: Institutional
                          Theory   18 hrs.
                          Practical 25 hrs.

                          Industrial   20 hrs.

Module Code :	**M-02**
Approved on :	
To be revised on :	

Occupation : Information and Communication Technology Technician

Competency Area : Perform word processing

Module Title : Perform word processing

Performance Objective: After completion of this module the trainee will be able to perform each of the tasks mentioned here according to the relevant standards.

Tasks to be performed:

Task No.	Task	Standards
B1	Create different types of documents using templates	• The appropriate template should be selected according to the purpose and the draft given. • The page setup should match the requirements of the draft. • It should be ensured that the document contains no spelling / grammatical errors. • The document should be saved / exported in a file format as required.
B2	Create tables	• Table should be inserted to the appropriate place and should contain the required number columns & rows as specified. • Table created should be formatted to match the dataset. (column width, row height). • Font size and type, alignment should be done according to the given instructions. • Cell border, width, style, colour modified, shading added to the cells as required. • Table properties should be adjusted to match the requirements.
B3	Add objects and special formatting	• The object (picture / image / chart) should be inserted into the document as required. • The object should be moved / copied / changed (size, position, colour) as required. • Auto shape, word art, text boxes should be applied and multiple objects (group, order, align) as required. • Special characters, equations and comments applied to the document as required.

Task No.	Task	Standards
B4	Format paragraph / document	• Paragraph formatting should be applied as per the requirement. (columns, bullets, numbering, indentation, formatting symbols, text alignment, line spacing, background shading, borders) • Document orientation, paper size and margins should change as required. • Header and Footer functions (page number, date, other auto text) should be applied as per the requirement.
B5	Create links	• Created Hyperlink / book mark should link the intended URL, file and e-mail document. • Picture / image / chart should be linked in to a document using Object Linking and Embedding (OLE) tools.
B6	Create mail merge	• Data file / mailing list should be created accurately with given information. • Main document should be created according to the given Instructions by inserting required data fields. • The data source should be merged with the main document according to the draft layout given.
B7	Create templates / cover page	• Template / cover page should be created as required. • Template / cover page should be saved in the specified location with an appropriate name and format.
B8	Find & replace text	• The text/word in the document should be found / replaced using options (Match case, prefix, suffix, whole words, and wildcards) / formats (font, paragraph, tabs, style, and highlight) available. • The all intended words / text should be found / replaced.
B9	Draw graphics / auto text	• Graphic should be drawn, inserted in the correct place and formatted as required. • Graphic options should be changed according to the requirement. • Auto text options should be changed according to the requirement. • The graphic should be saved in the required format (.gif, .bmp, .jpg, Png, Tiff)
B10	Create Table of Content (Index)	• Table of content should be created with all necessary headings. • The appearance should be customized according to the requirement.

Task No.	Task	Standards
B11	Print a word document / envelops / labels	• The document should be checked for payout, presentation, spelling and grammar. • The document should be viewed in print preview function to remove formatting errors. • The page setup should be set according to the document and connected printer. • Printing options should be selected according to the requirements (e.g. draft, graphic, mirror) depending on available printing options. • Content should be positioned appropriately depending on the size of the envelop / label. • It should be ensured that the printer is set according to the required envelop / label size.

Related Knowledge:

Format document/paragraph:
• Different document formats (personal/business/newsletter, quotations, tender report, memo and fax)
• Templates and edit templates
• Page setup standards
• Paragraph formatting options (bullets, numbering, indentation, formatting symbols, text alignment, line spacing, background shading, borders)
• Columns (two, three, left, right or more)
• Page border (box, shadow, 3D, custom with graphics)
• Header and footer (page number, date, and other auto text)
• Tab settings
• Publish settings (online, printing, PDF, image, XPS)
• Auto text (quick parts)-(document property, field)
• Use of Building Blocks organizer to change auto text property
• Templates and cover page styles
• Table of contents

Tables:
• Table formats - (column width, row height) Font size and type, Alignment
• Table cell formatting (Cell border, width, style, colour modified, shading)

Add objects:
• Selection and quality of pictures, clipart, drawings, chart and diagrams
• Procedure to capture screen shots
• Chart and diagrams
• Special characters, equations and comments
• Drawings, shapes, smart art, text boxes, word art

Links:
• Linking two or more documents (different types of files, web)
• Linking to a different location in the same document.

Mail merge functions:
- How to mail merge
- Data record structure.
- Different sources of data.

Printing:
- Print manager settings
- Select Printer (If more than one printer connected to the computer)
- Printing options (page setup, printer type, no of copies, page range, and print method)
- Label/envelop printing options (size, page setup).
- Printing standards (printing materials, printing methods, type of printers, colour, and resolution).

Graphics:
- Graphic options (group, rotate, resize, edit shape)
- Graphic effects (shadow, glow, 3D)
- Graphic formats. (.gif, .bmp, .jpg, png, TIFF)

• Find and replace functions:
- Find / replace Options (Match case, prefix, suffix; whole words; wildcards)
- Formats (font, paragraph, tabs, style, highlight)
- Go to a location (page, section, comment, foot note, table, headings)

Prerequisites: Completion of Module 01

Materials, Tools & Equipment Required:

PC with latest Office package, printer, printing materials, instructions / guidelines to perform operations

Target Time: Institutional
                              Theory   36 hrs.
                              Practical   36 hrs.

                              Industrial   80 hrs.

Module Code : **M-03**
Approved on :
To be revised on :

Occupation : Information and Communication Technology Technician

Competency Area : Prepare spreadsheets

Module Title : Prepare spreadsheets

Performance Objective: After completion of this module the trainee will be able to perform each of the tasks mentioned here according to the relevant standards.

Tasks to be performed:

Task No.	Task	Standards
C1	Format work sheet	• The created worksheet should have a name which is relevant to the contents and saved in the location according to the given instructions. • Worksheet should be formatted as per the requirement. • Data in the work sheet should be valid according to the original document.
C2	Apply built – in functions and formulas	• Formulae should be generated by using cell referencing and arithmetic operators as per the instructions given. • Appropriate functions and user defined formulas should be selected to suit the required operations. • The output should be validated for accuracy.
C3	Fill ,Sort and Filter data	• The work sheet should be filled with data as per the requirement. • A cell range should be sorted and filtered according to the given criterion. • The sorted and filtered results should be validated for accuracy.
C4	Prepare graphs and charts	• The data range and both axis should be selected to represent the whole set of data in the chart. • The chart type should be selected according to the nature of the data and the requirement. • The chart should be formatted to represent all information in the data set with titles and labels.
C5	Use data tools	• The duplicated data values should be removed as expected. • The data should be valid according to the given instructions. • It should be ensured that what-if analysis is accurate. • The linked data sources should be accessible within the worksheet.

Task No.	Task	Standards
C6	Create a pivot table	• The data set should be selected according to the pivot table requirement. • The data should be analyzed according to the given instructions.
C7	Develop and customize worksheet	• Worksheet settings should be applied as per the requirement. • Rows and columns should be freeze or unfreeze according to the requirement.
C8	Set Page properties and Print a spread sheet	• Header and footer / page margins / breaks should be arranged according to the given instructions. • Print area and scaling should be selected according to the printer connected.

Related Knowledge:

• Knowledge on basic spread sheet operations (open, close, use templates, save, save as different file types, switching between worksheets and between opened worksheets, use of help functions)
• Introduction to types of data, functions and formulas
• Formatting cells, rows, columns (height, width, Number, alignment, font, border, fill)
• Conditional formatting (highlight cells, data bars, colour scales, icon sets)
• Cell styles (colour and appearance)
• Selection of cells, rows and columns (single, range of adjacent cells/rows/columns, a range of non adjacent cells/rows/columns)
• Insert /delete rows and columns.
• Cell content/content of a cell range formatting
  - Copy –auto fill, copy handle tools.
  - Move- within work sheet, between worksheet, between opened spared sheets
  - Delete
• Numeric data set (values and figures for calculations)
• Formula- relative, mixed, absolute, cell referencing
• Use of arithmetic operators in formula
• Commonly used functions (use function library options-SUM, Average, Min, IF, iif, lookup, concatenate, date etc)
• User defined formulas (basic mathematical calculations)
• Fill command (according to the row or column)
• Sorting options (ascending, descending, custom, numerical, alphabetical)
• Filtering options ($>$, $<$,$>=$, $=<$, between, equals)
• Chart /graph type (column, line, pie, bar, area, scatter, etc)
• Format charts/graph options (colour, graphic, chart structure, titles and labels)
• Chart/graph operations (copy, move, resize, delete) within worksheet, between opened spreadsheets.
• Convert text to columns and vice versa
• Data validation (apply styles, view message, display arrays)
• Use data validation rules (pattern, range, type)
• Consolidate (functions. References, create links to source data)
• What- if analysis (scenario manager, goal seek, data table)

- External data source (MS Access, text file , others)
- Introduction to Pivot table
- Spreadsheet / worksheet settings (magnification / Zoom tools, tool bar display / hide, row / column freezing unfreezing options)
- Worksheet Preview function
- Worksheet margins, orientation, paper size, page fit, page breaks
- Header and footer functions
- On/off Gird lines display
- Print function

Prerequisites: Completion of Module 01

Materials, Tools & Equipment Required:

PC with latest office package, printer, printing materials instructions / guidelines to perform operations

Target Time: Institutional

	Theory	40 hrs.
	Practical	42 hrs.
	Industrial	80 hrs.

Module Code	**:**	**M-04**
Approved on	:	
To be revised on	:	

Occupation : Information and Communication Technology Technician

Competency Area : Prepare presentations

Module Title : Prepare presentations

Performance Objective: After completion of this module the trainee will be able to perform each of the tasks mentioned here according to the relevant standards.

Tasks to be performed:

Task No.	Task	Standards
D1	Creating a presentation	• Appropriate slide layout should be selected according to the requirement. • Slide content should be added / edited according to the given instructions. • Slide layout should be changed without affecting the content. • Created presentation should be saved with suitable format.
D2	Apply design templates to an existing presentation	• The design template should be selected to match the slide content and purpose. • Background colour and colour scheme should be customized according to presentation type and the requirement. • Font settings and slide effects should be changed according to the given instructions. • The slide master should be customized as required.
D3	Insert different media	• Media should be inserted into a slide at the required place. • Text, images and art objects should be copied and moved as required. • Inserted media should be matched with the requirement.
D4	Slide transition and animation	• Transitions and custom animation effects should be applied to the presentation / slide as required. • Inserted transitions and effects should work as expected.
D5	Insert action buttons and hyperlinks	• Action buttons should be selected to suit the purpose. • Inserted action buttons and hyperlinks effects should work as expected.

Task No.	Task	Standards
D6	Conduct the presentation	• The presentation should be reviewed to correct all spelling, grammar errors and for correct functioning of effects and animations. • The slide show should be presented as expected. • The rehearse timing should be managed according to the presentation requirement.
D7	Print slides	• Slide's page setup should be arranged according to the requirement • The print preview should match with the given requirement. • The entire presentation, specific slides, handouts, note pages, outline viewed of slides, printed as required. • The presentation should be packaged to run without presentation software.

Related Knowledge:

- Basic operations with presentations (open, close, create presentations with default template, Save (as presentation, show, compatible other formats)
- Settings (magnification/Zoom tool use, built in toolbars display/hide, user name, default directory/folder)
- Different slide layouts (place holders, back ground effects, comparison, and content with caption)
- Different presentation view modes
- Text formatting in presentations(text adding in standard/outline view, slide notes, text appearance, font type, font size, font colour, shading font style, change case, text alignments, line spacing, styles of bulleted lists and numbers)
- Template design layouts (standard and customized)
- Background styles
- Selection of colours
- Slide master (place holder, repeating content)
- Slide effects (office, apex, civic, flow etc)
- Drawing object formats (back ground colour, line colour, line thickness, line style, arrow style, connectors, shading, and rotation/flipping, align)
- Changing format (colour, shading, of inserted media (Image, Photo album, Chart, audio, video, animation, Smart Art, Word Art)
- Automatic slide numbering, automatic insertion of updated/non updated into the footer
- Compatible media types
- Audio recording and settings
- Slide transition schemes
- Effects (entrance, emphasis, exit, motion path)
- Animation settings (time, trigger)
- Output evaluation
- Different action buttons and its purpose
- Hyperlink (external files, web links, email address, different media files, different slide in same presentation)
- Setup slide (show type, show options, performance)

- Hide slide
- Presenter notes
- Moving between Slides when presenting
- Page set up options (slide size, orientation, and document type)
- Print function for entire presentation, specific slides, handouts, note pages, outline viewed of slides
- Print layout (number of slides per sheet, different document types)
- Presentation packaging

Prerequisites: Completion of Module 01 and Module 02

Materials, Tools & Equipment Required:

PC with latest presentation package, multimedia projector, scanner, microphone, printing Facilities, printing instructions

Target Time: Institutional
                Theory   15 hrs.
                Practical   20 hrs.

                Industrial   50 hrs.

Module Code : **M-05**
Approved on :
To be revised on :

Occupation : Information and Communication Technology Technician

Competency Area : Maintain databases

Module Title : Maintain databases

Performance Objective: After completion of this module the trainee will be able to perform each of the tasks mentioned here according to the relevant standards.

Tasks to be performed:

Task No.	Task	Standards
E1	Create tables	• Created Table should contain the correct / given Databases name, table name with field names. • Field type, field size and Primary keys of the table should match the given instructions. • The database design documentation should be matched with the given instructions.
E2	Create table relationship	• Key fields should be identified and created according to the design document. • Relationships among fields should be created as expected.
E3	Modify tables	• The structure of the table should be modified according to the database and user requirement. • Data types and field sizes should be matched with the given data set. • Table should adhere to the validation rules as specified in the database.
E4	Create forms	• The form should be created according to the design documentation. • The data should be stored in to the tables as expected.
E5	Create queries	• The query should be created according to the design documentation. • The output of the formula should be matched with the expected results. • The query results should be validated according to the requirement.

Task No.	Task	Standards
E6	generate reports	• The report should be created according to the requirement. • The report layout (arrangement of data fields, headings) should be changed as per the requirement). • The preview of the report should be as expected. • The reports should be previewed to ensure that errors are detected and corrected before printing. • The printed report should be free from any errors and format should be as expected.
E7	Modify records	• Modifications to the table/form should be done according to the requirement. • Data modifications should be done according to the validation rules. • Data should be sorted according to the given requirement. • Search command should be used for specific word, number, and date in a field as required. • The relevant filtering should be validated according to the given criteria.
E8	Backup and restore data	• The most suitable backup option/media should be selected. • All required information should be contained in the backup file.
E9	Link data base with external document	• The external data source should be accessible through the link. • The data base should be published in required format.

Related Knowledge:

- Knowledge on basic operations and settings of databases (open, close, new data base creation, save, help functions, backup creation and modes display toolbar hide/display)
- Database design concepts (tables, relations, indexes, primary and foreign key, normalization)
- Database documentation (number of tables, table names and attributes, keys, type of relationships, Entity relationship (ER) diagram)
- Different options in creating tables (using templates, custom table, table views, add new fields, data types, editing data types in fields)
- Different data types(text , number , currency etc)
- Validation rules (validate only necessary fields)
- Relationships one-to –one/one-to –many
- Relationship creation/deletion

- Data types (limitations and usages)
- Structure of other tables
- Integrity rules
- Basic text input (form) functions (Form creation, open, save, enter, modify and delete records, navigation, text headers/footers, form deletions)
- Database documentation (number of tables, table names and attributes, keys, type of relationships, Entity relationship (ER) diagram)
- Different form interfaces
- Structured query language (SQL)
- Formulas (table calculations)
- Query editing (add remove criteria, add/ remove/move/hide/unhide fields)
- Update, delete, and append query.
- Query run functions (delete, update, save and close)
- Basic report operations(report creation based on a table/ query, save, delete and save)
- Header/footer of the report
- Different report formats
- Report layout change (arrangement of data fields, headings)
- Print Report settings (orientation, paper size etc)
- Table validation rules and table structure
- Sorting and filtering methods
- Search command (specific word, number, date in a field)
- Application/removal of filter to a table /form
- Importance of keeping backups
- Backup types (live, routine, archive)
- Backup media
- Backup options (data backups, structure backups)
- External data source(Excel, XML file, ODBC database, CSV, Access, Text file)
- Publish settings (Online, PDF, other data formats)

Prerequisites: Completion of Module 01

Materials, Tools & Equipment Required:

PC with latest Database package, database and table requirements, external data source, Back up media, backup requirement, Filtering criteria, database with design documentation, Modification instructions

Target Time: Institutional
                 Theory   48 hrs.
                 Practical   48 hrs.

                 Industrial   80 hrs.

Module Code **:** **M-06**
Approved on :
To be revised on :

Occupation **:** Information and Communication Technology Technician

Competency Area : Perform internet and electronic mail operations

Module Title **:** Perform internet and electronic mail operations

Performance Objective: After completion of this module the trainee will be able to perform each of the tasks mentioned here according to the relevant standards.

Tasks to be performed:

Task No.	Task	Standards
F1	Perform Browser operations	• Default home page should be loaded when browser starts. • The browser should be operated without any security issues. • Installed plug-ins should work as expected.
F2	Use Search engines	• The search engine should be selected according to the requirement. • The required information should be able to search from the internet. • The selected data should be saved in the computer.
F3	Download and upload file	• Required file to download should be located. • Downloaded file should be verified for accuracy. • It should be ensured that the required files are uploaded.
F4	Perform e mail operations	• Mail should be sent and received as expected. • The attachment should be attached to the mail message • The saved attachment should be able to open. • The e mail address should be retrieved from contact list. • The e mails should be filtered as expected.
F5	Print e mails / web pages	• Web page printout should be as expected. • E mail printout should be as expected.

Related Knowledge:

- Types of browsers
- Browser compatibility
- Different types of plug-in (Flash, PDF, Media player)
- Browser history settings (offline storage, cookies)
- Browser navigation
- Functionality of search engines
- Different types of search engines
- Search key words
- Saving options (file formats)
- Searching for files on the internet
- Download file types and related applications
- File size limits
- Mail service configuration settings
- Attaching files to e-mails (scanned document, zip folders and other media)
- Recipients (To, CC, BCC)
- Rules and filters (spam filters, inbox categorizing, junk e mail folders and criteria based rules)
- Manage contact list(create recipient groups/mailing list, priority levels)
- Printer setting and printing options
- Web browsing
- E-mail browsing

Prerequisites: Completion of Module 01

Materials, Tools & Equipment Required:

PC with internet connection and browser software, printing facilities, email
Client, e mail account settings

Target Time: Institutional
                           Theory   16 hrs.
                           Practical   16 hrs.

                           Industrial   50 hrs.

Module Code **:** **M-07**
Approved on :
To be revised on :

Occupation **:** Information and Communication Technology Technician

Competency Area : Install and configure operating system
(Commercial and open source)

Module Title **:** Install and configure operating system

Performance Objective: After completion of this module the trainee will be able to perform each of the tasks mentioned here according to the relevant standards.

Tasks to be performed:

Task No.	Task	Standards
G1	Check hardware compatibility with operating system	• Compatibility of memory (RAM), storage, Video Graphic Array (VGA) and bit width (32 / 64) are checked against manufacturer's and vendor's specifications. • Check resolution and video memory in checking Video Graphic Array (VGA) compatibility. • Compatibility of the system against the software is ensured.
G2	Prepare the computer for installation	• Installation media and BIOS settings should be matched with existing devices. • Hard disk should be partitioned according to the user requirement. • Computer specification should be compatible with the selected operating system.
G3	Install the operating system	• Instruction should be given according to the user requirement when installation is in progress. • OS should be activated / registered legally. • OS should be running without any issues.
G4	Install device drivers	• Devices in the system should be identified by referring system information. • The latest version of driver software should be acquired using Internet / CD. • Installed devices should work as per the manufacturer's specifications.

Task No.	Task	Standards
G5	Install application software	• Latest antivirus software should be installed, if necessary. • Necessary application software should be listed according to customer requirement and system compatibility. • Latest version of selected software package should be acquired. • Selected software should be installed following instructions appeared on the screen. • The system should be restarted after each installation, if required. • Installed software should be configured to the user requirement and activated according to the vendor's guidelines. • It is assured all installed software functioning properly.
G6	Ensure standard performance	• Boot up and shutdown time should be within reasonable duration according to system specifications. • Overall performance of the system should be as per the hardware profile.

Related Knowledge:

- Interpretation of printed manuals.
- Interpretation of system information.
- Hardware components and their specifications.
- How to open casing of a system.
- Conditions of warranty.
- General tools.
- Occupational health and safety
- Different types of partitions.
- Storage media.
- Knowledge on BIOS(Basic input output system)
- Related DOS commands.
- Third party utility software.
- Knowledge on system image.
- License agreement and activation.
- Internet access.
- Knowledge on drivers.
- Identifying uninstalled devices.
- Searching driver software through internet.
- Troubleshooting device driver conflicts.
- Knowledge on application software.
- Searching application software, plug-ins, service packs through internet.
- Software configuration and activation.
- Knowledge on application software and hardware functionality.
- Functionality of system software.
- Performance standards of the computer.

Prerequisites: completion of M 01-06

Materials, Tools & Equipment Required:

Manufacturer's or vendor's specifications / manuals, Internet browsing facilities, computer technician's tool kit, operating system software, powered computer system, additional third party utility software, prepared computer system for   installation, computer system with OS installed, driver software, Internet access, application software, vendor's guidelines, computer system with OS   and   application   software   installed, manufacturer's specifications and vendor's guidelines

Target Time: Institutional
                     Theory   20 hrs.
                     Practical   30 hrs.

                     Industrial   50 hrs.

Module Code : **M-08**
Approved on :
To be revised on :

Occupation : Information and Communication Technology Technician

Competency Area : Conduct installation and troubleshooting of network from client PC

Module Title : Conduct installation and troubleshooting of network from client PC

Performance Objective: After completion of this module the trainee will be able to perform each of the tasks mentioned here according to the relevant standards.

Tasks to be performed:

Task No.	Task	Standards
H1	Identify network hardware	• NIC(Network interface card) should be compatible to the type of network. • Installation of NIC should be done as per the given manufacturer's instructions. • Cable should be selected according to EIA / TIA standards.
H2	Add client computer to the network	• Computer name and IP address should be unique as per the standards. • Connectivity should be displayed as connected in the task bar. • PC successfully added to the workgroup.
H3	Install / configure network resources to the client PC	• Follow up the organizational policies and rules when share software and hardware. • Configured network resources should be used according to requirement.
H4	Verify proper functioning of network services	• Verification of shared resources should be done according to the organizational policies. • Resources can be used as expected.
H5	Troubleshoot network resources and services	• Operating errors identified and sorted according to organizational policy and to manufacturer's specifications. • Required service / resources should be working as expected.

H6	Instruct & Demonstrate Users	• User Demonstrations should be provided as per the organizational requirement.

Related Knowledge:

- Type of network (wired / wireless) and their coverage.
- Basic network commands and standards.
- Testing procedures.
- Network devices, Connectors and related tools.
- General tools.
- Occupational health & safety.
- Configure IP, PC name.
- Structure of workgroup.
- Knowledge on sharing resources.
- PC configuration knowledge.
- Software / driver installation knowledge.
- Knowledge on system tools and utilities.
- Computer Network security

Prerequisites: Completion of M01-M07

Materials, Tools & Equipment Required:

PC with NIC wired / wireless, patch cord / access point, switch, manufacturer's instructions, PC connected to the network, details of the network, requirement list of resources, Network tool kit, Network devices, cables an tools, cable testers, crimping tools, connectors

Target Time: Institutional
                                    Theory   15 hrs.
                                    Practical   20 hrs.

                                    Industrial   20 hrs.

Module Code :	**M-09**
Approved on :	
To be revised on :	

Occupation : Information and Communication Technology Technician

Competency Area : Develop graphics for web/ print media

Module Title : Develop graphics for web/ print media

Performance Objective: After completion of this module the trainee will be able to perform each of the tasks mentioned here according to the relevant standards.

Tasks to be performed:

Task No.	Task	Standards
J1	Select graphics formats for web	• Images should be selected according to the client's requirements and W3 standards.
J2	Create graphics for web	• Export graphic according to the required format. • Application software should be selected according to the given graphic job.
J3	Select graphics formats for printing	• Images should be selected according to the client's requirements and printing standards.
J4	Create graphics for printing	• Export graphic according to the required format. • Application software should be selected according to the given graphic job.

Related Knowledge:

- Type of graphic formats (Eg; JPEG, PNG, GIF, TIFF and BMP).
- Image preview software.
- Analysis Vector vs. Raster graphics.
- Compare image quality standards.
- W3 standards.
- Type of graphic formats (Eg; JPEG, PNG, PSD and TIFF).
- Compare image quality according to printing standards.
- Familiar with graphic design and editing software (Eg; Photoshop, Illustrator, CorelDraw).
- Fundamentals of color theory and standards.
- 4 (four) colors separation.
- Principles of Animation.
- Animating software (E.g. Flash)
- Exporting images from different media.

Prerequisites: Completion of   M01-M08

Materials, Tools & Equipment Required:

Sample images from all popular file types, scanned images, camera images, graphic editing software

Target Time: Institutional
                            Theory   20 hrs.
                            Practical   40 hrs.

                            Industrial   50 hrs.

Module Code : **M-10**
Approved on :
To be revised on :

Occupation : Information and Communication Technology Technician

Competency Area : Design & Develop Static web pages

Module Title : Design & Develop Static web pages

Performance Objective: After completion of this module the trainee will be able to perform each of the tasks mentioned here according to the relevant standards.

Tasks to be performed:

Task No.	Task	Standards
K1	Identify web site requirement	• Customer /organizational requirement should be identified according to the organizational requirements. • Relevant information should be gathered to satisfy user and organization. • Information to be published should be decided considering internet related security and ethics. • The report of proposed web site should include all the requirements, terms and conditions.
K2	Develop web page layout	• Site map should be created according to the requirement stated in the proposal. • Story board should be designed according to the user interface standards. • The navigation structure should be user friendly. • Page layout should be design according to the requirement stated in the proposal. • Site map, story board documents and prototype pages should be developed according to the requirement stated in the proposal. • Web page should be developed according to the approved prototype.
K3	Embed different media to web page	• All embedded media elements and other files should be compatible with all popular browsers.

Related Knowledge:

- Knowledge on functionality of Internet
- Domain names and web sites
- Static and dynamic web sites
- Web browsers
- User's requirements
- Personal relations and communication skills
- Internet related security and ethics
- Preparation of site maps
- Design story board
- Different software on web development (graphic editing, web authoring)
- Knowledge on HTML, CSS
- Different file types of media elements
- Different browsers (Internet Explorer, Chrome, Firefox)

Prerequisites: Completion of   M01-M09

Materials, Tools & Equipment Required:

Different customer information, approved proposal, PC with required software installed, images, audio and video clips, other files, PC with different browsers installed, stationary

Target Time: Institutional
                             Theory   20 hrs.
                             Practical   40 hrs.

                             Industrial   75 hrs.

Module Code	**:**	**M-11**
Approved on	:	
To be revised on	:	

Occupation   **:**   Information and Communication Technology Technician

Competency Area :   Develop basic software solution

Module Title   :   Develop basic software solution

Performance Objective: After completion of this module the trainee will be able to perform each of the tasks mentioned here according to the relevant standards.

Tasks to be performed:

Task No.	Task	Standards
L1	Identify software solution requirement	• Requirement specification for software solution should be identified in terms of input, processes and output.(system analysis) • The initial documentation for the software solution should be developed including all the user requirements, procedures, terms and conditions.
L2	Prepare system diagrams and algorithm	• Pseudo code/flow charts should be developed according to the identified requirements. • Pseudo code/flow charts and ER diagrams (entity- relationship diagrams) should be developed according to the user requirement. • The design document should be prepared according to programming concepts
L3	Develop coding and connect database	• The GUI(Graphical User Interface) should be developed to meet the functional requirement of design document. • The coding should be developed using a suitable programming language. • The source code should be compiled and bug free. • Application should be able to access data from the database.
L4	Packaging, implementation of software solution	• Executable file of the created system should work without run time errors. • The information system should be installed to verify proper functioning as per the requirements. • The system should be tested after entering data as per the requirement.

Related Knowledge:

- Knowledge on basic system analysis and Design concepts(what is a system, different phases of system development life cycle, the components of system analysis and designing)
- Programming concepts (variables, arrays, constants, control structures)
- Programming language(VB.net)
- Database software(Access/Excel)
- Organizational processes
- Different Information systems and applications
- Interface design
- Install and test systems

Prerequisites: Completion of   M01-M10

Materials, Tools & Equipment Required:

Different customer information, approved proposal, PC with required software installed, images, audio and video clips, other files, PC with different browsers installed, stationary

Target Time: Institutional
                             Theory   75 hrs.
                             Practical   80 hrs.

                        Project   165 hrs.

Note: The Project work may include development of basic software system.
Students can be allocated in to groups to do this project.