

## **Foundation in Information Technology (FIT)**

### **FIT 103: ICT Applications**

The ICT Applications course consists of eight modules as mentioned in the following table.

<b>Module Code</b>	<b>Module</b>	<b>Total Credits</b>	<b>Theory</b>	<b>Practical</b>
FIT 103-1	Computing for the Society	3	2	1
FIT 103-2	Introduction to Computers	4	3	1
FIT 103-3	Word Processing for Electronic Documents	4	2	2
FIT 103-4	Spreadsheets for Calculation	3	2	1
FIT 103-5	Multimedia and Electronic Presentation	3	2	1
FIT 103-6	Data and Databases	4	2	2
FIT 103-7	The Internet and Web Applications	4	2	2
FIT 103-8	Programming	4	2	2
	<b>Total</b>	<b>29</b>	<b>17</b>	<b>12</b>

#### **Assessment Strategy:**

#### **Theoretical Component:**

Students must pass all online assessments of each module (two MCQ type assignments per module) and two hour Multiple Choice Questions (MCQs) based e-Test covering all eight ICT modules. The pass mark will be 50.

Successful completion of the theoretical component will allow students to register for the BIT Programme).

#### **Practical Component:**

Students should pass a two hour practical test. Those who have successfully completed the theoretical component will be allowed to sit for the practical test. There will be an open practical assignment in each module for self-assessment.

Successful completion of the practical test is required to obtain the FIT Certificate.

#### **The Syllabus**

The syllabus of each module of ICT Applications are listed below.

## Module 1: Computing for the Society

### Program Content

<b>Course Code:</b>	FIT 103-1 (Module 1)		
<b>Course Name:</b>	Computing for the Society		
<b>Credit Value:</b>	3		
<b>Core/Optional</b>	Core		
<b>Hourly Breakdown</b>	Theory	Practical	Independent Learning
	30	30	90

#### Course Aim/Intended Learning Outcomes:

After successful completion of this module the students will be able to;

- Describe the uses and impacts of new technologies in ICT
- Explain health problems due to computing
- Use computing devices safely, legally and ethically
- Identify potential computer risks
- Explain how to protect your computer and data

#### Course Content:

Topic	Teaching (Hrs)	Practical (Hrs.)
1. ICT in Different Sectors	7	5
2. Computing Streams and Job Opportunities	4	2
3. Electronic Wastes, Misuses and Mistakes	4	5
4. Legal and Ethical Issues Associated with Computing	6	6
5. Health Issues and Ergonomics	3	6
6. Safeguarding Hardware, Software and Data	6	6
<b>Total</b>	<b>30</b>	<b>30</b>

#### 1. ICT in Different Sectors

##### 1.1. Government

- 1.1.1. Citizen to Government
- 1.1.2. Business to Government
- 1.1.3. Government to Government
- 1.1.4. GIS Applications

1.1.5.Right to Information

1.2. Education

1.2.1.Technology for Classroom

1.2.2.e-Learning

1.2.3.m-learning

1.2.4.Learning Management Systems

1.3. Industries

1.3.1.ICT in Manufacturing Industry (robotics and drones)

1.3.2.e-Tourism

1.3.3.ICT for Fishing Industry

1.3.4.ICT for Farming

1.4. Business

1.4.1.e-Business

1.4.2.e-Commerce

1.4.3.Mobile Business and related technologies

1.5. Transport

1.5.1.e-Travel

1.5.2.Transportation Technologies

1.5.3.Intelligent Transportation Systems

1.6. Medicine and Health Care

1.6.1.Use of ICT in diagnosis

1.6.2.Telemedicine

1.6.3.Prosthetic Implants

1.7. Entertainment

1.7.1.3D images and animations

1.7.2.Holographic image processing technology

1.7.3.Cartoon films

1.7.4.Digital audio materials

1.7.5.Digital games

1.7.6.Simulation games

1.8. Social Security

1.8.1.Criminal Investigation

1.8.2.Threats Detection

1.9. Forensics

1.10. CCTV

## **2. Computing Streams and Job Opportunities**

2.1. Major Streams in Computing

2.1.1.Computer Science

2.1.2.Computer Engineering

2.1.3.Information Technology

2.1.4.Software Engineering

2.1.5.Information Systems

2.2. Job Opportunities

2.2.1.Software Engineer/Programmer

2.2.2.System/Software Architect

2.2.3.System/Software Designer

2.2.4.Software Quality Assurance Engineer

2.2.5.Database Administrator

2.2.6.Computer Engineer

2.2.7.System Analyst

2.2.8.System Developer

2.2.9.Network Administrator

2.2.10. Cyber/Network Security Analyst

2.2.11. Graphic Designer

2.2.12. Media Developer

2.2.13. IT Consultant

2.3. Threats for Job Opportunities

2.3.1.Robots

2.3.2.Software Agents

2.3.3.Smart Devices

2.3.4.IoT Devices

## **3. Electronic Wastes, Misuses and Mistakes**

### 3.1. Computer Wastes

- 3.1.1. Electronic Waste and Harmful elements
- 3.1.2. Harmful Effects of Computer Waste
- 3.1.3. e-Waste Management
- 3.1.4. Minimizing e-waste through the 3R technique
- 3.1.5. Proper disposal of e-waste

### 3.2. Green Computing

- 3.2.1. Greening of Computing
- 3.2.2. Computing/IT for Greening

### 3.3. Computer-user Mistakes

- 3.3.1. Common Mistakes that Computer Users Make
- 3.3.2. Avoiding Computer Mistakes

### 3.4. Misuse and Unauthorised Use of Computers

- 3.4.1. Misuse of Computers
- 3.4.2. Misuse ACT

## **4. Legal and Ethical Issues Associated with Computing**

### 4.1. Legal Issues

- 4.1.1. Data Thefts
- 4.1.2. Hardware Theft
- 4.1.3. Crackers
- 4.1.4. Hackers
- 4.1.5. Intellectual property rights
- 4.1.6. Fraud
- 4.1.7. Impersonation
- 4.1.8. Software Piracy
- 4.1.9. Economic/Business Torts

### 4.2. Cyber Crimes

- 4.2.1. Identity Theft
- 4.2.2. Cyber-extortion
- 4.2.3. Cyber Terrorism

4.2.4.Sharing Obscene Graphics

4.3. Issues related to values

4.3.1.Plagiarism

4.3.2.Privacy

4.4. Malicious software / Malware

4.4.1.Spams

4.4.2.Virus

4.4.3.Worms

4.4.4.Trojan horses

4.4.5.Ransomware

4.4.6.Spyware

4.4.7.Adware

4.4.8.Scareware

4.5. Social issues related with ICT

4.5.1.Digital divide

4.5.1.1. Definitions of Digital Divide

4.5.1.2. Means of Connectivity

4.5.1.3. Overcoming the Divide and Sustainable Development Goals

4.5.2.Digital Bridge

4.5.3.De-Skilling

## **5. Health Issues and Ergonomics**

5.1. Health Issues

5.1.1.Musculoskeletal Problems

5.1.2.RSI – Repetitive Stress Injury

5.1.3.CTS – Carpel Tunnel Syndrome

5.1.4.CVS - Computer Vision Syndrome

5.1.5.Tired

5.1.6.Stress

5.2. Minimizing Computer Related Health Issues

5.2.1.Ergonomics

- 5.2.2. Good working positions
- 5.2.3. Lighting
- 5.2.4. Glare
- 5.2.5. Ventilation
- 5.2.6. Selecting and arranging workstation components
- 5.2.7. Ergonomics of using mobile devices

## **6. Safeguarding Hardware, Software and Data**

- 6.1. Laws, Standards and Procedures
  - 6.1.1. Gramm-Leach-Bliley Act
  - 6.1.2. HIPPA Act
- 6.2. Data Protection and Security
  - 6.2.1. Passwords
  - 6.2.2. Software Firewall
  - 6.2.3. Antivirus
  - 6.2.4. Backups
  - 6.2.5. Input Controls
  - 6.2.6. Software Upgrades
  - 6.2.7. Disposal Policies and Procedures
  - 6.2.8. General Data Protection Regulations and Principles
- 6.3. Intellectual property rights
  - 6.3.1. Copyright
  - 6.3.2. Patents
  - 6.3.3. Confidential Information
- 6.4. Safeguarding Hardware
  - 6.4.1. Handling Storage Media
  - 6.4.2. Storing Computer Equipment
  - 6.4.3. Access Control Systems
  - 6.4.4. Recovery of Stolen Property
  - 6.4.5. Uninterrupted Power Supply (UPS)
  - 6.4.6. Hardware Firewalls

6.4.7. Controlled access through locked doors

6.4.8. Surge protector

6.4.9. Environmental factors

**Teaching /Learning Methods:**

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**Assessment Strategy:**

The assessment of the **theoretical component of ICT Applications course** consists of two compulsory components: an e-test and assessments for each module. The pass score of each component of ICT Applications is 50%.

**Final Examination (e-test)**

The final examination of ICT Applications course will be an e-test which will be conducted in the supervised mode. The e-test will consist of 50 Multiple Choice Questions (MCQs) which carries questions from each module of ICT Applications course based on the credit weight. The duration of the e-test is 2 hours.

**Assessment:**

In addition to the e-test, students must have passed the assessments of all modules of ICT Applications course, in order to obtain a "Pass" grade for the theoretical component of ICT Applications of the FIT programme.

The assessment of each module consists of two online assignments: Assignment 1 and Assignment 2. Assignment 1 will cover the first half of the syllabus, while the assignment 2 will cover the second half of the syllabus of the module. Both assignments of a particular module will be online quizzes of Multiple Choice Question (MCQ) type, which will be activated in each module page on the FIT VLE.

Students should pass both assignment 1 and assignment 2 of each module, in order to pass the assessment component of each module.



**References/ Reading Materials:**

**Ref 1:** Stair, R., & Reynolds, G. (2018). Principles of Information Systems, 13th Edition: Cengage Learning. (Available from pdfdrive.com)]

**Ref 2:** C programming – <https://www.atnyla.com/>

**Ref 3:** Marakas, G. M. & O'Brien, J. A. (2013). Introduction to information systems. 16th Edition: Tata McGraw-Hill Publishing Company Limited. (Available from pdfdrive.com)

## Module 2: Introduction to Computers

### Program Content

<b>Course Code:</b>	FIT 103-2 (Module 2)		
<b>Course Name:</b>	Introduction to Computers		
<b>Credit Value:</b>	4		
<b>Core/Optional</b>	Core		
<b>Hourly Breakdown</b>	Theory	Practical	Independent Learning
	45	30	125

#### Course Aim/Intended Learning Outcomes:

At the completion of this module, the student will be able to;

- Describe the fundamentals of a computer system with its evolution
- Describe processing, input, output and storage devices
- Identify different categories of computer software
- Describe types, functions and utilities of an operating system
- Explain the needs of data communication and its representation in a computer system
- Identify the different types of logic operators and Boolean functions
- Apply Boolean Algebra concepts to solve simple real-world problems
- Describe the uses of computer networks in terms of its types and structure
- Identify potential computer threats, vulnerabilities and privacy issues
- Explain how to protect your computer and information
- Analyze different types of information systems
- Describe different types of software development methodologies.

**Course Content:**

Topics	Teaching Hours	Practical Hours
1. Fundamentals of Computer System	4	2
2. Hardware Devices	7	4
3. Software Products	4	2
4. Operating Systems	10	10
5. Data Representation and Digital Logic	8	5
6. Computer Networks	5	2
7. Computer Security	4	3
8. Information Systems	3	2
Total	45	30

**1. Fundamentals of Computer System**

- 1.1. Evolution of the Computer [Ref 1 pp 4-9] [Ref 2 pp 27-30]
- 1.2. Classification of Computers [ Ref 1 pp 9-15] [Ref 2 pp 33-35]
- 1.3. The parts of a Computer System [Ref 1 pp 30- 31]
- 1.4. Information Processing Cycle [Ref 1 pp 32-33]
- 1.5. Performance of a Computer [Ref 1 145-151]

**2. Hardware Devices**

- 2.1. Processing Devices [Ref 1 pp 33, 156-161]
  - 2.1.1. Microcomputer Processors [ Ref 1 pp 157-159]
  - 2.1.2. RISC Processors [ Ref 1 pp 159-160]
  - 2.1.3. Parallel Processing [ Ref 1 pp 160-161]
- 2.2. Memory Devices [Ref 1 pp 34]

- 2.3. Input devices [ Ref 1 pp 36, 54-85] [Ref 2 37-41]
  - 2.3.1. Keyboard [Ref 1 pp 54-60]
  - 2.3.2. Mouse [Ref 1 pp 60-64]
  - 2.3.3. Ergonomics and Input Devices [ Ref 1 pp 65- 69]
  - 2.3.4. Devices for Hand [Ref 1 pp 74-76]
  - 2.3.5. Optical Input Devices [ Ref 1 pp 77-79]
  - 2.3.6. Audio and Video Visual Input Devices [Ref 1 pp 79-85]
- 2.4. Output devices [Ref 1 pp 36, 93-123] [Ref 2 41-45]
  - 2.4.1. Monitors [Ref 1 pp 93-105]
  - 2.4.2. Data Projectors [Ref 1 pp 106]
  - 2.4.3. Sound Systems [ Ref 1 pp 106-110]
  - 2.4.4. Printers [ Ref 1 pp 114-122]
  - 2.4.5. Plotters [ Ref 1 pp 122-123]
- 2.5. Storage Devices [ Ref 1 pp 36] [ Ref 46-50]
  - 2.5.1. Magnetic Storage and Optical Storage [Ref 1 pp 36-38, 175-187]
  - 2.5.2. Solid-State Storage [ Ref 1 pp 187-189]
  - 2.5.3. Cloud Storage
  - 2.5.4. Optimizing Disk Performance [ Ref 1 195- 198]
  - 2.5.5. Ports in a computer [Ref 1 pp 161-163] [Ref 2 51-52]

### **3. Software Products**

- 3.1. System Software [Ref 1 pp 39] [Ref 2 130-131]
- 3.2. Application Software [ Ref 1 pp 40] [Ref 2 pp 132]
- 3.3. Enhancing OS with Utility Software [ Ref 1 pp 220-223]
- 3.4. Acquiring Software [Ref 1 pp 381-383]

### **4. Operating Systems**

- 4.1. Types of Operating Systems [Ref 1 209-211] [Ref 2 pp 134]
- 4.2. PC Operating Systems
  - 4.2.1. DOS Operating System [Ref 1 pp 228-233]
  - 4.2.2. Microsoft Windows Operating System [Ref 1 233-237] [Ref 2 pp 133]
  - 4.2.3. Apple Mac Operating System [Ref 1 pp 238] [Ref 2 pp 133]

- 4.2.4. UNIX [Ref 1 pp 239-240]
- 4.2.5. Ubuntu Operating System [Ref 2 pp 133]
- 4.2.6. Hanthana Linux [Ref 1 pp 240-241] [Ref 2 pp 133]
- 4.2.7. Android Operating System [Ref 2 pp 133]
- 4.2.8. Network operating System [Ref 1 pp 242]
- 4.2.9. Embedded Operating System [Ref 1 pp 245-246]

#### 4.3. Customizing Operation System Settings

- 4.3.1. Change theme
- 4.3.2. Change the Window Colour
- 4.3.3. Enlarging text
- 4.3.4. Setting Desktop Background
- 4.3.5. Customizing Desktop Icons
- 4.3.6. Using a Screen Saver
- 4.3.7. Touch Typing
- 4.3.8. Changing the volume
- 4.3.9. Managing the other desktop features

#### 4.4. Services of an Operating Systems

- 4.4.1. Process Management [Ref 2 pp 136]
- 4.4.2. Memory Management [Ref1 pp 143-145] [Ref 2 pp 137]
- 4.4.3. Device Management [Ref 2 pp 138]
- 4.4.4. File Management [Ref 2 pp 139]
- 4.4.5. Security Management [Ref 2 pp 140]
- 4.4.6. Network Management [Ref 2 pp 141]

### **5. Data Representation and Digital Logic**

- 5.1. Data Communication Devices [Ref 1 pp 284-293] [Ref 2 53-61]
- 5.2. Data Representation in a Computer System [Ref 1 131-141] [ Ref 2 68-90]
- 5.3. How Computer Process Data [ Ref 1 pp 140-145]
- 5.4. Character Representation [Ref 4 pp 10]
- 5.5. Basic Arithmetic and Logic Operations [Ref 4 pp 10]
- 5.6. Basic Logic Gates [Ref 2 pp 110-116]
- 5.7. Combinational and Universal Logic Gates [Ref 2 pp 116-120]

5.8. Boolean Algebra [Ref 2 120-122]

5.9. Boolean Expressions [Ref 4 pp 12]

## **6. Computer Networks**

6.1. The uses of a Network [ Ref 1 pp 255-260]

6.2. Types of Computer Network [Ref 1 pp 260-261] [Ref 2 pp 61-62]

6.3. Structure of a Network [Ref 1 pp 262-265]

6.4. Network Topologies and Protocols [Ref 1 265-268] [ Ref 2 63-64]

6.5. Network Media [ Ref 1 pp 268-269]

6.6. Network Hardware [Ref 1 pp 269-275]

6.7. Protocols [Ref 1 pp 275-276]

6.8. OSI Model [Ref 1 pp 276-279]

## **7. Computer Security**

7.1. Basic Security Concepts [Ref 1 pp 539-540]

7.2. Data Privacy [ Ref 1 pp 542- 546]

7.3. Threats to Users [Ref 1 540-541]

7.4. Threats to Hardware [Ref 1 pp 546-549]

7.5. Threats to Data [ Ref 1 pp 549-553]

7.6. Protective Measures [Ref 1 pp 558-573]

## **8. Information Systems**

8.1. Different Types of Information System

8.2. System Development Models and Methods [ Ref 3 61-63]

8.3. System Development Life Cycle [Ref 3 57-61]

### **Teaching /Learning Methods:**

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**Assessment Strategy:**

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**Final Examination (e-test)**

The final examination of ICT Applications course will be an e-test which will be conducted in the supervised mode. The e-test will consist of 50 Multiple Choice Questions (MCQs) which carries questions from each module of ICT Applications course based on the credit weight. The duration of the e-test is 2 hours.

**Assessment:**

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The assessment of each module consists of two online assignments: Assignment 1 and Assignment 2. Assignment 1 will cover the first half of the syllabus, while the assignment 2 will cover the second half of the syllabus of the module. Both assignments of a particular module will be online quizzes of Multiple Choice Question (MCQ) type, which will be activated in each module page on the FIT VLE.

Students should pass both assignment 1 and assignment 2 of each module, in order to pass the assessment component of each module.

**References/ Reading Materials:**

**Ref1:** Introduction to Computers (7<sup>th</sup> Edition) by Peter Norton, Tata McGraw-Hill Edition,

**Ref2:** Grade 10 ICT Textbook

**Ref3:** Grade 11 ICT Textbook

**Ref4:** Grade 12 Teacher’s Guide

## Module 3: Word Processing for Electronic Documents

### Program Content

<b>Course Code:</b>	FIT 103-3 (Module 3)		
<b>Course Name:</b>	Word Processing for Electronic Documents		
<b>Credit Value:</b>	4		
<b>Core/Optional</b>	Core		
<b>Hourly Breakdown</b>	Theory	Practical	Independent Learning
	30	60	110
<b>Course Aim/Intended Learning Outcomes:</b>			
Upon completion of this module, students will be able to:			
<ul style="list-style-type: none"> <li>• Explain the concept of Word processing and its advantages</li> <li>• List different word processing applications and their features</li> <li>• Describe in detail create the new document and what are the various bars used in MS-Word.</li> <li>• Describe in detail create the objects such as table objects, graphic objects in MS-Word.</li> <li>• Apply the mail merge function using the two or more documents.</li> <li>• Apply the proof reading for the created document.</li> <li>• Create fully completed document through MS-Word</li> </ul>			
<b>Course Content:</b>			
<b>Topic</b>	<b>Teaching (Hrs)</b>		<b>Practical (Hrs.)</b>
1. Introduction to Word processing	4		
2. Explore the Office 365	6		10
3. Creating a New Document	4		15
4. Working on Pictures and Graphics	4		13
5. Working on Tables	4		12
6. Mail Merge	4		5
7. Proofreading	4		5
Total	30		60



## **1. Introduction to Word processing**

- 1.1. Basic introduction
- 1.2. Software types for word processing

## **2. Explore the Office 365**

- 2.1. Introduction to the Office 365
- 2.2. Feature identification
- 2.3. Working with the user interface
- 2.4. Getting help with the Office 365

## **3. Creating a New Document**

- 3.1. Opening, Saving, Printing and Closing documents
- 3.2. Starting with the new blank document
- 3.3. Working on page setup
- 3.4. Writing on a document
- 3.5. Modify the appearance of text
- 3.6. Simple formatting
- 3.7. Create a table of content

## **4. Working on Pictures and Graphics**

- 4.1. How to insert a picture
- 4.2. Doing adjustment for a picture
- 4.3. Cross reference to characters and pictures
- 4.4. How to insert a clip art, smart art, Excel chart
- 4.5. Apply image captions

## **5. Working on Tables**

- 5.1. How to insert a table
- 5.2. Adding, deleting a column and row
- 5.3. Apply table caption

## **6. Mail Merge**

- 6.1. Understand the mail merge process
- 6.2. Start the mail merge process
- 6.3. Choose and refine the data source
- 6.4. Insert merge field
- 6.5. Preview and complete merge

## **7. Proofreading**

- 7.1. Applying spell & grammar checking
- 7.2. Thesaurus

### **Teaching /Learning Methods:**

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### **Assessment Strategy:**

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#### **Final Examination (e-test)**

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#### **Assessment:**

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Students should pass both assignment 1 and assignment 2 of each module, in order to pass the assessment component of each module.

**References/ Reading Materials:**

**Ref 1:** New Perspectives Microsoft Office 365 & Office 2019 Introductory (MindTap Course List) 1st Edition by Patrick Carey, Katherine T. Pinard, Ann Shaffer, Mark Shellman , Sasha Vodnik.

## Module 4: Spreadsheet for Calculation

### Program Content

<b>Course Code:</b>	FIT 103-4 (Module 4)		
<b>Course Name:</b>	Spreadsheet for Calculation		
<b>Credit Value:</b>	3		
<b>Core/Optional</b>	Core		
<b>Hourly Breakdown</b>	Theory	Practical	Independent Learning
	30	30	90

#### Course Aim/Intended Learning Outcomes:

After successful completion of this module the students will be able to;

- Identify the different components in a worksheet.
- Carry out basic operations in a given spreadsheet.
- Construct formulas to manipulate numeric data in a Worksheet
- Set up the chart function to represent numeric data in multiple formats.
- Differentiate between formulas and functions using Excel.

#### Course Content:

Topic	Teaching (Hrs)	Practical (Hrs.)
1. Introduction to Electronic Spreadsheet	2	2
2. Working with worksheets and workbooks	4	3
3. Formula Creation & Math Functions	6	5
4. Cell for different requirements	4	5
5. Relative & absolute cell reference	5	5
6. Charts for display data	5	6
7. Setting Up Pages	4	4
Total	30	30

#### 1. Introduction to Electronic Spreadsheet

- 1.1. Introduction to Spreadsheet Application Software
- 1.2. Software types for worksheets

- 1.3. Working with user interface
- 1.4. Getting help with the Office 365

## **2. Working with worksheets and workbooks**

- 2.1. Opening, Saving , and Renaming Worksheets
- 2.2. Navigating the worksheet
- 2.3. Cell References
- 2.4. Entering and Editing Data
- 2.5. Simple Formatting

## **3. Formula Creation & Math Functions**

- 3.1. Simple calculations using values and mathematical operators
- 3.2. Formulas with cell addresses and operators
- 3.3. Use of functions to do calculations

## **4. Cell for different requirements**

- 4.1. Working with formatting tools Ribbon
- 4.2. Use of dialog boxes to format values
- 4.3. Adjusting row height/column width
- 4.4. Formatting a range of cells
- 4.5. Locking Cells and Hiding Formulas

## **5. Relative & absolute cell references**

- 5.1. Use of fill handle for copying formula
- 5.2. Understand the Difference Between Relative and Absolute References
- 5.3. Relative cell reference
- 5.4. Row absolute cell references
- 5.5. Column absolute cell references
- 5.6. Row and column absolute cell references

## **6. Charts for display data**

- 6.1. Creating Charts

## 6.2. Formatting/modifying Chart

### 7. Setting up pages

7.1. Adding title rows/columns and headers/footers

7.2. Freeze Panes

7.3. Page Breaks & Page Setup

7.4. Print Preview

7.5. Workbook Protection

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#### **Assessment Strategy:**

The assessment of the **theoretical component of ICT Applications course** consists of two compulsory components: an e-test and assessments for each module. The pass score of each component of ICT Applications is 50%.

#### **Final Examination (e-test)**

The final examination of ICT Applications course will be an e-test which will be conducted in the supervised mode. The e-test will consist of 50 Multiple Choice Questions (MCQs) which carries questions from each module of ICT Applications course based on the credit weight. The duration of the e-test is 2 hours.

#### **Assessment:**

In addition to the e-test, students must have passed the assessments of all modules of ICT Applications course, in order to obtain a "Pass" grade for the theoretical component of ICT Applications of the FIT programme.

The assessment of each module consists of two online assignments: Assignment 1 and Assignment 2. Assignment 1 will cover the first half of the syllabus, while the assignment 2 will cover the second half of the

syllabus of the module. Both assignments of a particular module will be online quizzes of Multiple Choice Question (MCQ) type, which will be activated in each module page on the FIT VLE.

Students should pass both assignment 1 and assignment 2 of each module, in order to pass the assessment component of each module.

**References/ Reading Materials:**

**Ref 1:** Chapter 7: Information and Communication Technology, Grade 10

**Ref 2:** Advanced Excel by tutorialspoints

**Ref 3:** New Perspectives Microsoft Office 365 & Office 2019 Introductory (MindTap Course List) 1st Edition by Patrick Carey, Katherine T. Pinard, Ann Shaffer, Mark Shellman , Sasha Vodnik

## Module 5: Multimedia and Electronic Presentation

### Program Content

<b>Course Code:</b>	FIT 103-5 (Module 5)		
<b>Course Name:</b>	Multimedia and Electronic Presentation		
<b>Credit Value:</b>	3		
<b>Core/Optional</b>	Core		
<b>Hourly Breakdown</b>	Theory	Practical	Independent Learning
	30	30	90
<b>Course Aim/Intended Learning Outcomes:</b>			
After successful completion of this module the students will be able to;			
<ul style="list-style-type: none"> <li>• Define multimedia concepts</li> <li>• Define the various factors of images</li> <li>• Use Software to edit images</li> <li>• Define the role of audio in creating multimedia content</li> <li>• Use audio editing tools</li> <li>• Define animation and describe how it is used in multimedia</li> <li>• Create digital animation</li> <li>• Describe the role of electronic presentations</li> <li>• Create electronic presentations</li> </ul>			
<b>Course Content:</b>			
Topic	Teaching (Hrs)	Practical (Hrs.)	
1. Introduction to Multimedia	04	02	
2. Working with Digital Images	05	06	
3. Introduction to Audio	04	04	
4. Developing Digital Animations	05	06	
5. Introduction to Video	05	06	
6. Electronic Presentations	07	06	
Total	30	30	



## **1. Introduction to Multimedia**

- 1.1. What is meant by multimedia? (R1 Page 1-2)
- 1.2. Evolution of multimedia (R2 Page 07-31)
- 1.3. Where and when to use multimedia (R1 page 2-7)
- 1.4. Future of multimedia

## **2. Working with Digital Images**

- 2.1. Elements of an image (R2 Page 121-123)
  - 2.1.1. Working with Pixel (R1 Page 72)
  - 2.1.2. Resolution of an Image (R1 Page 90)
  - 2.1.3. Colours and Colour models (R1 Page 88-94)
  - 2.1.4. Image size and compression (R2 Page 125-127)
- 2.2. Image Types
  - 2.2.1. Bitmap Images (Raster graphic ) (R1- page 71-79)
  - 2.2.2. Vector drawings (R1 Page 80)
  - 2.2.3. Difference between raster graphic and vector graphic (R1 Page 81-82)
- 2.3. Image processing with software (R3)
  - 2.3.1. Common features of an image editing software
  - 2.3.2. Image editing using GIMP software
    - 2.3.2.1. GIMP editing tools
    - 2.3.2.2. Creating a graphic with pictures
    - 2.3.2.3. Creating a graphic with text
  - 2.3.3. Practices in image editing

## **3. Introduction to Audio**

- 3.1. Different audio files formats (R1 Page 121-123)
- 3.2. Audio editing (R4)
- 3.3. Importance of audio editing
- 3.4. Software used to edit audio
- 3.5. Common features of audio editing software
- 3.6. Making digital audio files with an audacity software tool

## **4. Developing Digital Animations**

### 4.1. Introduction to animations

- 4.1.1. Principles of animations (R1 Page 141-142)
- 4.1.2. Importance of animations (R1 Page 140)
- 4.1.3. Difference between 2D and 3D animations (R1 Page 142-143)

### 4.2. Animation Techniques(R1 Page 143-148)

#### 4.2.1. Types of Frames

- 4.2.1.1. Key Frame
- 4.2.1.2. Tween Frame
- 4.2.1.3. Frames
- 4.2.1.4. Blank Key Frame

#### 4.2.2. Kinematics

#### 4.2.3. Morphing

### 4.3. Different Animation file formats (R1 Page 149)

### 4.4. Create an animation (R5)

- 4.4.1. software used to create animations
- 4.4.2. Common features of animation software
- 4.4.3. Making animations with Pencil2D Animation tool

## **5. Introduction to Video**

### 5.1. Role of Video in multimedia content (R1 Page 164)

### 5.2. Factor of Video

- 5.2.1. Frames and frame rates (R2 Page 302 )
- 5.2.2. Resolution of a Video (R1 Page 165-166)
- 5.2.3. Analog Display standards and Digital Video standards (R2 Page 305-311)
- 5.2.4. Video file size (R2 Page 302)

### 5.3. Creating a video clip(R6)

- 5.3.1. Video editing tools
- 5.3.2. Common features of video editing software
- 5.3.3. Creating videos with Windows Openshot Video Editor

## **6. Electronic presentations**

6.1. Introduction to electronic presentations (R7: Page 230-233)

6.1.1. What is meant by presentation?

6.1.2. Benefits of electronic presentations

6.2. Electronic presentation software (R7: Page 233-236)

6.2.1. Common features of Electronic presentation software

6.2.2. Popular presentation software

6.3. Create an electronic presentation(R8)

6.3.1. Introduction to Microsoft office 365 PowerPoint tools

6.3.2. How to use Microsoft office 365 PowerPoint to create a presentation

6.4. Features of a good presentation (R7: Page 232)

### **Teaching /Learning Methods:**

Foundation in Information Technology is a self-learning programme. Candidates can learn online at [VLE for FIT \(Virtual Learning Environment for FIT\)](#) where all course learning materials are available online.

Candidates will be provided with access to the [FIT VLE](#) at the registration for FIT Programme. Learners are encouraged for higher and continuous engagement with learning at FIT VLE for successful completion of the course.

### **Assessment Strategy:**

The assessment of the **theoretical component of ICT Applications course** consists of two compulsory components: an e-test and assessments for each module. The pass score of each component of ICT Applications is 50%.

### **Final Examination (e-test)**

The final examination of ICT Applications course will be an e-test which will be conducted in the supervised mode. The e-test will consist of 50 Multiple Choice Questions (MCQs) which carries questions from each module of ICT Applications course based on the credit weight. The duration of the e-test is 2 hours.

**Assessment:**

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Students should pass both assignment 1 and assignment 2 of each module, in order to pass the assessment component of each module.

**References/ Reading Materials:**

**Ref 1:** Multimedia: Making It Work (Eighth Edition):Tay Vaughan

**Ref2:** Digital Multimedia: Nigel Chapman and Jenny Chapman

**Ref3:** <https://www.gimp.org/>

**Ref4:** <https://www.audacityteam.org/>

**Ref5:** <https://www.pencil2d.org/>

**Ref6:** <https://www.openshot.org/>

**Ref7:** Information and Communication technology Grade 10: Educational Publications Department,  
Sri Lanka

**Ref8:** <https://www.office.com/>

## Module 6: Data and Databases

### Program Content

<b>Course Code:</b>	FIT 103-6 (Module 6)		
<b>Course Name:</b>	Data and Databases		
<b>Credit Value:</b>	4		
<b>Core/Optional</b>	Core		
<b>Hourly Breakdown</b>	Theory	Practical	Independent Learning
	30	60	110
<b>Course Aim/Intended Learning Outcomes:</b>			
After successful completion of this module the students will be able to;			
<ul style="list-style-type: none"> <li>• Explain the objectives of data and information management</li> <li>• Describe the fundamental elements of relational database management systems</li> <li>• Explain the basic concepts of relational database design (relational data model, entity-relationship model)</li> <li>• Design ER-models to represent simple database application scenarios</li> <li>• Convert the ER-model to relational tables.</li> <li>• Populate relational database and formulate SQL queries on data.</li> <li>• Develop structured query language (SQL) queries to create and read relational database data</li> </ul>			
<b>Course Content:</b>			
<b>Topic</b>	<b>Teaching (Hrs)</b>	<b>Practical (Hrs.)</b>	
1. Introduction to Database Management Systems	2		
2. Introduction to Database Architecture	2		
3. Introduction to Relational Model	2		
4. Introduction to Conceptual Design through Entity-Relationship (ER) Modeling	6	15	
5. Introduction to Relational Database Design Using ER-to-Relational Mapping	8	20	
6. Introduction to Data Manipulation using SQL	10	25	
Total	30	60	

## **1. Introduction to Database Management Systems**

### 1.1 The Evolution of Database Technology

- 1.1.1. Data, information, database, database system, database management system [Pg: (3-6)]
- 1.1.2. Characteristics of the Database Approach. [Pg: (10-13)]
- 1.1.3. File oriented systems: Meeting the need for random access processing [Pg: (10-17)]
- 1.1.4. Advantages of Using the DBMS Approach: Data redundancy, inadequate data manipulation capabilities, program-data dependency; Data independence. [Pg. (17-23)]

### 1.2 Users of a Database

- 1.2.1. Users and practitioners of a Database System [Pg. (15-17)]

### 1.3 History of Database Applications [Pg. (23-27)]

## **2. Introduction to Database Architecture**

- 2.1.1. Components of a Database Management System (DBMS) [Pg. (31-35)]
- 2.1.2. Data Models and Schemas [Pg. (32-36)]
- 2.1.3. The Three-Schema Architecture. [Pg. (36-38)]

## **3. Introduction to Relational Model**

- 3.1. Introduction to Relational Model Concepts: Domains, Attributes, Tuples, and Relations [Pg. (151-156)]
- 3.2. Relational Database Schemas [Pg. (160-163)]
- 3.3. Keys in Relational Model
  - 3.3.1. Entity Integrity, Referential Integrity, through Primary and Foreign Keys [Pg. (163-166)]

## **4. Introduction to Conceptual Design through Entity-Relationship (ER) Modeling**

- 4.1. Introduction database design process [Pg. (60-62)]
- 4.2. Entities and Attributes [Pg. (63-67)]
  - 4.2.1. Weak Entities [Pg. (79)]
- 4.3. Key Attributes [Pg. (68-69)]
- 4.4. Relationship Types and Degree [Pg. (72-76)]
  - 4.4.1. Binary Relationship [Pg. (76-79)] [Pg. (88-91)]
  - 4.4.2. Introduction to ER notation [Pg. (81-85)]
  - 4.4.3. Exercises on ER modeling [Pg. (92-104)]

## 5. Introduction to Relational Database Design Using ER-to-Relational Mapping

- 5.1. Mapping of Regular Entity Type [Pg. (291)]
- 5.2. Mapping of Weak Entity Types [Pg. (292)]
- 5.3. Mapping of Binary 1:1 Relationship Types [Pg. (293)]
- 5.4. Mapping of Binary 1:N Relationship Types [Pg. (294-295)]
- 5.5. Mapping of Binary M:M Relationship Types [Pg. (295-296)]

## 6. Introduction to Data Manipulation using SQL

- 6.1. Creating tables in SQL [Pg. (180-182)]
- 6.2. Introduction to SQL data types [Pg. (182-184)]
- 6.3. Adding primary and foreign keys to tables [Pg. (185-187)]
- 6.4. Selecting Data
  - 6.4.1. Basic data selection [Pg. (187-189)]
  - 6.4.2. Use of Where clause [Pg. (192-193)]
- 6.5. Inserting data into a table [Pg. (198-199)]

### Teaching /Learning Methods:

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### Assessment Strategy:

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### Final Examination (e-test)

The final examination of ICT Applications course will be an e-test which will be conducted in the supervised mode. The e-test will consist of 50 Multiple Choice Questions (MCQs) which carries questions from each module of ICT Applications course based on the credit weight. The duration of the e-test is 2 hours.

**Assessment:**

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Students should pass both assignment 1 and assignment 2 of each module, in order to pass the assessment component of each module.

**References/ Reading Materials:**

**Ref 1:** Ref 1. Fundamentals of Database Systems by R. Elmasri and S.B. Navathe, 7th edition, Addison-Wesley, 2015.



## Module 7: The Internet and Web Applications

### Program Content

<b>Course Code:</b>	FIT 103-7 (Module 7)		
<b>Course Name:</b>	The Internet and Web Applications		
<b>Credit Value:</b>	4		
<b>Core/Optional</b>	Core		
<b>Hourly Breakdown</b>	Theory	Practical	Independent Learning
	30	60	110
<b>Course Aim/Intended Learning Outcomes:</b>			
After successful completion of this module the students will be able to;			
<ul style="list-style-type: none"> <li>• Describe the evolution of the Internet</li> <li>• Explain the terminologies related to the Internet and the World Wide Web</li> <li>• Explain the connecting to the Internet and how web works</li> <li>• Identify what a web application is</li> <li>• Use of Web Storage Overview</li> <li>• Use Web Authoring Tools for web development</li> <li>• Design a simple website</li> </ul>			
<b>Course Content:</b>			
Topic	Teaching (Hrs)	Practical (Hrs.)	
1. History of the Internet	2	4	
2. The Terminology of the internet	2	4	
3. Connecting to the Internet	4	4	
4. New Media and Web Applications	4	4	
5. Web Storage Overview	4	4	
6. Web Authoring Tools	7	20	
7. Web Application Creation	7	20	
Total	30	60	

## **1. History of the Internet**

- 1.1. Evolution of the World Wide Web (WWW)
- 1.2. Generations of the web/ (How web technology is evolving): Web 1.0, Web 2.0, Web 3.0, Web 4.0, Web5.0
- 1.3. Internet Protocols and Internet Protocol version IPv4 and IPv6
- 1.4. History of HTML
- 1.5. Internet Web Browsers

## **2. The Terminology of the internet**

- 2.1. uniform resource **identifier (URI)** and Uniform Resource Locator (URL)
- 2.2. Domain name
- 2.3. Domain Name Server
- 2.4. IP addresses
- 2.5. HyperText Transfer Protocol (HTTP)
- 2.6. Standards bodies
- 2.7. The World Wide Web Consortium (W3C)
- 2.8. Search Engine

## **3. Connecting to the Internet**

- 3.1. Describing the different connecting methods (e.g., Tethering)
- 3.2. Internet service provider (ISP)
- 3.3. List the advantages and disadvantages of connecting methods
- 3.4. Client-server model and web architecture
- 3.5. How web Works

## **4. New Media and Web Applications**

- 4.1. Social media
- 4.2. Blogs
- 4.3. Video conferencing
- 4.4. Online newspapers
- 4.5. eBusiness
- 4.6. Online games

#### 4.7. Products and Features of the Google (Google ecosystem)

### 5. Web Storage Overview

- 5.1. local device storage
- 5.2. Serverless Computing/ Cloud Storage
- 5.3. Google Cloud Platform
- 5.4. Microsoft Azure
- 5.5 Oracle Cloud Platform
- 5.6 OpenWhisk

### 6. Web Authoring Tools

- 7.1. What is Full-Stack?
- 7.2. Introduction to Web Client Software
- 7.3. Introduction to Web Server Software (HTML Slide 125)
- 7.4. Version Controlling (What is GitHub?)

### 7. Web Application Creation

- 6.1. Introduction
- 6.2. Developing a simple website
- 6.3. Creating a web page using HTML 4
  - 6.3.1. The HTML DOM (Document Object Model)
  - 6.3.2. Adding simple styles to the webpage using CSS
  - 6.3.3. Adding interactions to a web page using JavaScript

#### **Teaching /Learning Methods:**

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**Assessment Strategy:**

The assessment of the **theoretical component of ICT Applications course** consists of two compulsory components: an e-test and assessments for each module. The pass score of each component of ICT Applications is 50%.

**Final Examination (e-test)**

The final examination of ICT Applications course will be an e-test which will be conducted in the supervised mode. The e-test will consist of 50 Multiple Choice Questions (MCQs) which carries questions from each module of ICT Applications course based on the credit weight. The duration of the e-test is 2 hours.

**Assessment:**

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Students should pass both assignment 1 and assignment 2 of each module, in order to pass the assessment component of each module.

**References/ Reading Materials:**

Ref 1: [https://www.w3schools.com/whatis/whatis\\_ajax.asp](https://www.w3schools.com/whatis/whatis_ajax.asp)

Ref 2: <http://www.evolutionoftheweb.com/#/evolution/day>

Ref 3: <https://www.google.com/accessibility/products-features/>

Ref 4: <https://dev.to/flippedcoding/what-is-the-difference-between-a-uri-and-a-url-4455>

Ref 5: [https://www.w3schools.com/whatis/whatis\\_github.asp](https://www.w3schools.com/whatis/whatis_github.asp)

## Module 8: Fundamentals of Programming

### Program Content

<b>Course Code:</b>	FIT 103-8 (Module 8)		
<b>Course Name:</b>	Fundamentals of Programming		
<b>Credit Value:</b>	4		
<b>Core/Optional</b>	Core		
<b>Hourly Breakdown</b>	Theory	Practical	Independent Learning
	30	60	110
<b>Course Aim/Intended Learning Outcomes:</b>			
After successful completion of this module the students will be able to;			
<ul style="list-style-type: none"> <li>• Illustrate how to solve a simple problem using a flow chart.</li> <li>• Write the algorithm using a pseudo code for the given problem.</li> <li>• Describe the basic structure of a program using given programming language.</li> <li>• Identify the appropriate data type for variables to represent different data.</li> <li>• List the operators according to the precedence.</li> <li>• Describe the conditional statements.</li> <li>• Describe the iterative statements.</li> <li>• Write a structured program to solve a simple program.</li> </ul>			
<b>Course Content:</b>			
<b>Topic</b>	<b>Teaching (Hrs)</b>	<b>Practical (Hrs.)</b>	
1. Solving a problem using a program	01	01	
2. Overview of C Programming Language	01	01	
3. Data Types in C Language	01	02	
4. Variables and constants	02	04	
5. Operators and Enums in C Language	03	06	
6. Conditional statements	03	07	
7. Loop control	03	07	
8. Array	03	07	
9. Strings	02	04	
10. Functions	02	04	
11. Recursion	02	05	
12. Pointers	02	04	
13. Structures	03	04	
14. File Handling	02	04	
<b>Total</b>	<b>30</b>	<b>60</b>	

## **1. Solving a problem using a program**

- 1.1. Analyze a simple problem to draw the flow chart
- 1.2. Identify the alternative solutions for a given problem.
- 1.3. Write an algorithm using the pseudocode for the selected solution
  - 1.3.1. What is an algorithm
  - 1.3.2. Control structure of an algorithm
  - 1.3.3. Draw a flow chart to present an algorithm

## **2. Overview of C Programming Language**

- 2.1. My first program
- 2.2. Basic Structure of C Program
- 2.3. Identifiers
- 2.4. Keywords
- 2.5. Tokens
- 2.6. Format Specifiers

## **3. Data Types in C Language**

- 3.1. About Data Types
- 3.2. int Data Type
- 3.3. float Data Type
- 3.4. double Data Type
- 3.5. char Data Type

## **4. Variables and constants**

- 4.1. About variable
- 4.2. Variable Declaration and Initialization
- 4.3. Variable types and Scope
- 4.4. Local Variables
- 4.5. static Variable
- 4.6. Global variables
- 4.7. Constants

## **5. Operators and Enums**

- 5.1. About Operators
- 5.2. Arithmetic Operators

5.3. Relational Operators

5.4. Bit-wise Operators

5.5. Logical Operators

5.6. Assignment Operators

5.7. Conditional Operator

5.8. sizeof() Operator

5.9. Operator Precedence

## **6. Conditional statements**

6.1. About conditional statements

6.2. if Statement

6.3. if-else Statement

6.4. Nested if statement

6.5. If else if Ladder

6.6. switch case

## **7. Loop control**

7.1. About Loops

7.2. while loop

7.3. do while Loop

7.4. for Loop

7.5. break Statement

7.6. continue Statement

## **8. Array**

8.1. Single Dimensional Array

8.2. Multi-Dimensional Array

## **9. String functions**

9.1. About String Functions

9.2. Commonly Used String Functions

## **10. Functions**

10.1. About functions

10.2. Calling a function

10.3. return type

10.4. Call by Value

10.5. User Defined Functions

10.6. Predefined Functions

**11. Recursion**

11.1. Introduction to Recursion

**12. Pointers**

12.1. About pointer

12.2. Types of pointers

12.3. NULL pointer

12.4. Access and retrieve

12.5. Pointer and Array

12.6. Strings as Pointers

12.7. Pointer to Function

12.8. Call by Reference

**13. Structures**

13.1. About structures

13.2. Examples for structures

**14. File Handling**

14.1. About files

14.2. Create a new file

14.3. Read from a file

14.4. Write to a file

14.5. Append to a file

**Teaching /Learning Methods:**

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Students should pass both assignment 1 and assignment 2 of each module, in order to pass the assessment component of each module.

**References/ Reading Materials:**

**Ref 1:** C: The Complete Reference Paperback – 1 Jul 2017 by Herbert Schildt (Author)

**Ref 2:** C programming – <https://www.atnyla.com/>

**Programming Environment**

[https://www.tutorialspoint.com/compile\\_c\\_online.php](https://www.tutorialspoint.com/compile_c_online.php)