Grade 12 Information Technology Unit 1 Course Outline

September (2024) -April (2025)

IMPORTANT DATES

1. **First Six Week Test: October 14 – 18**
2. **Midterm Break: October 21 - 23**
3. **Second Six Week Test: December 9 – 13**
4. Prize Giving: **December 18**
5. **Christmas Break: December 20 - January 3**
6. Mock Exams: **February 17 - March 4**
7. Easter Mid Term**: March 5-7**

Department Name:	Computer Studies
Grade Level:	12
Title of Course:	Grade 12 Information Technology
Duration:	September 9 (2024) - April (2025)
Description of the Course:	**ABOUT THE UNIT** This course provides an introduction to the field of Information Technology (IT) and covers fundamental concepts, systems, and problem-solving processes essential for understanding and applying IT in various contexts. The course is divided into three modules based on the CAPE Information Technology Unit 1 syllabus **Module 1: Fundamentals of Information Technology** **Module 2: Information Technology Systems** **Module 3: Information and Problem-Solving**.

Course Objective:	**Module 1: Fundamentals of Information Technology** *Upon Completion of this module, students should be able to:* • Understand the definition and scope of Information Technology. • Explore the history and evolution of computer hardware, software, and telecommunications. • Distinguish between data, information, and knowledge. • Examine the characteristics and sources of information. • Identify tools used in information entry, retrieval, processing, and dissemination. **Module 2: Information Technology Systems** *Upon Completion of this module, students should be able to:* • Identify the components of an Information Technology system including hardware, software, and network. • Understand the purpose and functions of different hardware and software components. • Explore the systems development life cycle (SDLC) and software engineering. • Examine different types of Human-Computer Interaction (HCI). • Analyze security mechanisms and the structure of the World Wide Web. **Module 3: Information and Problem-Solving** *Upon Completion of this module, students should be able to:* • Understand problem-solving as a process. • Learn how to analyze problems and identify possible solutions. • Explore the role of information in real-life problem-solving. • Develop skills in creating data flow diagrams and algorithms. • Connect algorithms to programming.
Student Learning Outcomes:	**Module 1: Fundamentals of Information Technology** 1. **Understanding IT Concepts:** • Students will be able to define Information Technology and explain its scope and relationship with other computing disciplines. 2. **Historical Perspective:**

- Students will demonstrate an understanding of the history and evolution of computer hardware, software, and telecommunications.

3. **Distinguishing Data, Information, and Knowledge:**

- Students will accurately differentiate between data, information, and knowledge, and provide examples of each.

4. **Evaluating Information Sources:**

- Students will be able to identify and evaluate various information sources, discussing their reliability, timeliness, and relevance.

5. **Tool Identification:**

- Students will identify the tools used for the entry, processing, and dissemination of information and justify their selection in various scenarios.

Module 2: Information Technology Systems

1. **Components of IT Systems:**

- Students will be able to describe the components of Information Technology systems, including hardware, software, networks, and users.

2. **Hardware and Software Functions:**

- Students will demonstrate understanding by describing the purpose and functions of various hardware and software components.

3. **System Development Life Cycle (SDLC):**

- Students will explain the stages of the SDLC and the tools used in each stage, with examples.

4. **Human-Computer Interaction (HCI):**

- Students will compare different types of HCI, discussing their features and the implications of user interface design.

5. **Network Security Awareness:**

	• Students will be able to discuss various network components and security mechanisms, identifying potential threats and protective measures. **Module 3: Information and Problem-Solving** 1. **Problem-Solving Process:** • Students will explain the concept of problem-solving as a process, detailing the stages involved. 2. **Role of Information in Problem-Solving:** • Students will analyze how information is used in real-life problem-solving and decision-making processes. 3. **Data Flow Diagrams (DFDs):** • Students will develop and interpret data flow diagrams to represent information flow within a system. 4. **Algorithm Development:** • Students will be able to create and represent algorithms using flowcharts and pseudocode, applying them to solve simple problems. 5. **Introduction to Programming:** • Students will outline the relationship between algorithms and programming, and understand basic programming concepts. *These outcomes align with the course objectives and ensure that students acquire both theoretical knowledge and practical skills in Information Technology.*
Topical Outline of the Course Content:	• **Module 1: Fundamentals of Information Technology** • Definition and Scope of Information Technology • History of IT: Hardware, Software, Internet, Telecommunications • Data vs. Information vs. Knowledge • Characteristics of Information: Timeliness, Security, Shareability

- Information Sources: Books, Databases, Internet

Module 2: Information Technology Systems

- IT Systems and Components

- Hardware and Software Functions

- Systems Development Life Cycle (SDLC)

- Human-Computer Interaction (HCI)

- Network Components and Security

Module 3: Information and Problem-Solving

- Understand problem-solving as a process.
- Learn how to analyze problems and identify possible solutions.
- Explore the role of information in real-life problem-solving.
- Develop skills in creating data flow diagrams and algorithms.
- Connect algorithms to programming.

Guidelines/Suggestions for Teaching Methods and Student Learning Activities:	**Lectures:** Provide theoretical background and contextual understanding. **Group Discussions:** Facilitate collaborative learning and deeper understanding of key concepts. **Practical Assignments:** Engage students in hands-on activities to reinforce learning. Differentiated Instruction: Tailoring instruction to meet the needs, strengths, and interests of each student. **Presentations:** Encourage students to present research findings, enhancing public speaking and analytical skills. **Guest Lectures:** Invite industry professionals to provide real-world insights. **Peer Teaching:** Students teach their peers, which can reinforce their own learning and foster collaboration.

Guidelines/Suggestions for Methods of Student Evaluation:	**Continuous Assessment:** Includes quizzes, assignments, and class participation.
	Classwork: Assignments completed during class that help monitor ongoing student progress and understanding.
	Homework Assignments: Tasks assigned for completion outside of class, reinforcing concepts taught and promoting independent learning.
	Presentations: Assessment of research, analysis, and communication skills.
	Class Participation: Assessment based on engagement in discussions, question and answer and activities.
	Project Work: Application of learned concepts to solve real-world problems whether in groups or individually.
	Peer Assessment: Students evaluate each other's work in group projects or individual assignments based on criteria provided by the teacher. This encourages critical thinking, reflection, and the ability to give and receive constructive feedback.
	Simulations: Students participate in simulations that replicate real-world IT scenarios, such as network troubleshooting or Program development. Provides experiential learning opportunities and assesses students' ability to apply knowledge in dynamic situations.
	Research Papers: Students research a topic related to IT, write a paper, and present their findings to the class. Develops research skills, critical thinking, and the ability to synthesize information from various sources.
	Midterm and Final Exams: Written tests to evaluate overall understanding and retention.
Suggested Readings, Texts, Objects of Study:	- CAPE Information Technology Syllabus - Recommended Textbooks: "Computers Are Your Future" by Daley B., "A Level Computing" by Heathcote P., "Computer Concepts" by Parson J. and Oja D. - Online Resources: Relevant educational websites and databases.
Bibliography of Supportive Texts and Other Materials	- Daley, B. (2007). *Computers Are Your Future.* New Jersey: Pearson Prentice Hall. **Heathcote, P.** (2005). *A Level Computing.* London: Letts.

- **Long, L., & Long, N.** (2004). *Computers: Information Technology in Perspective.* New Jersey: Prentice Hall.

- **Parson, J., & Oja, D.** (2007). *Computer Concepts.* New York: International Thompson Publishing Company.

- **Shelly, G., Cashman, T., & Vermaat, M.** (2008). *Discovering Computers.* New York: International Thompson Publishing Company.