GIRLS' HIGH SCHOOL
INFORMATION TECHNOLOGY

Form 4 Academic Year: September 2025 – July 2026
Term 1 – 14 weeks

COMPUTER FUNDAMENTALS

GENERAL OBJECTIVES

On completion of this Section, students should:

1. Develop an understanding of the fundamental hardware and software components and the interrelationship among them;
2. Develop expertise in evaluating computer systems; and,
3. Develop an understanding of basic information processing principles.

SPECIFIC OBJECTIVES	CONTENT
1. Explain the concept of Information Technology;	Definition and scope of Information Technology.
2. Distinguish among the major types of computer systems in terms of processing speed, storage and portability;	***Major types:*** (a) Super Computers (for example, Cray). (b) Mainframes (for example, IBM zEnterprise System). (c) Desktop systems. (d) Mobile devices (for example, laptops, notebooks, netbooks, smartphones, tablets and game consoles). (e) Embedded devices (for example, special-purpose systems such as controllers in microwaves, car ignition systems, answering machines).
3. Explain the functions of the major hardware components of a computer system;	Major components: input, central processing unit, primary memory (RAM and ROM), secondary storage, output. (a) Secondary storage devices: hard disk, magnetic tape, flashes drive, memory card, and optical disks (CD, DVD and BluRay). (b) Units of storage: bits, bytes, kilobytes, megabytes, gigabytes, terabytes.
4. Explain how the major hardware components of a computer system interrelate;	Input processing output storage (IPOS) cycle.
5. Evaluate the relative merits of cloud storage and local storage;	Definition of cloud and local storage. Assessment criteria: capacity, cost, accessibility; security issues.
6. Select appropriate input/output devices to meet the needs of specified applications;	Associate the following devices with suitable applications: (a) Input: Optical mark reader (OMR), character readers (OCR, MICR), mouse, joystick, bar code reader, document scanner, light-pen, touch terminals, voice response unit, Touch Screens (tablets, point of sale, ATM), keyboard, digital camera, biometric systems, sensors, remote control, sound capture, pointing devices, webcam. (b) Visual output: Monitors, Printers (laser, inkjet, dot matrix, thermal, plotters, 3D Printers), microfilm.

	(c) Audible output: speakers, headphones, earphones.
7. Explain the role of the different types of software in computer operation;	**System Software**: Operating System, Utilities. **Application software**: general-purpose and special-purpose; integrated package; source: off the shelf, custom-written, and customized.
8. Discuss the relative merits of the various types of user interface;	**Hardware**: touch screens, specialized keyboards. **Software**: Command line, menu-driven, graphical user, touch.
9. Evaluate the suitability of a given computer system for a specific purpose;	Basic knowledge of system specification needed for purposes such as: to run a video game, web browsing, graphic design, video editing, and desktop publishing. **Criteria**: (a) Processing speed (CPU type and speed); (b) Memory (RAM); (c) Secondary storage (capacity and speed); (d) Types of software; and, (e) Input/Output devices.
10. Troubleshoot basic computer hardware problems;	• Cable problems (for example, loose cables). • Monitor problems (for example, improperly adjusted monitor controls). • Printer problems (for example, changing printer cartridges). • Battery problems (for example, loose or dead battery).

SECTION 5: SPREADSHEETS

GENERAL OBJECTIVE

On completion of this Section, students should develop expertise in the use of a spreadsheet package in the development of computer applications.

SPECIFIC OBJECTIVES CONTENT

Students should be able to:

1. Explain the purpose of a spreadsheet; Uses:
   (a) Preparing budgets, financial statements, and documents such as invoices; and,
   (b) Carrying out 'what if' analyses and forecasting.

2. Use appropriate terminologies and notions commonly associated with spreadsheets;
   - Common features: workbook, worksheet, column, row, cell (label, value, formula, function, range), cell address.

3. Select basic pre-defined systems functions;
   - Including sum, average, date, max, min, count, counta, countif, vlookup, rank, pmt.

4. Create advanced arithmetic formulae;
   - Formulae including addition, subtraction, multiplication, division, and use of brackets.

5. Replicate (copy) formulae into other cells;
- Relative addressing, absolute addressing (naming of ranges).
- Effect of move, copy, delete operations on formulae.

6. Manipulate columns and rows;
   - Insert and delete columns and rows.
   - Numeric data formatting.

7. Manipulate data in a spreadsheet;
   - Sorting data (primary field, ascending vs descending order).
   - Filtering data (simple criterion, complex criterion).

8. Perform charting operations; and,
   - Select appropriate chart: Column charts, Bar charts, line graphs, pie charts.
   - Labelling charts: graph titles, labels on axes.

9. Manipulate multiple worksheets.
   - Use of two or more worksheets to solve problems involving some of all of the functions and operations listed above.

13 WEEKLY OBJECTIVES AND ASSOCIATED ACTIVITIES FOR COMPUTER FUNDAMENTALS (SECTION 1) AND SPREADSHEETS (SECTION 5) OF THE CSEC INFORMATION TECHNOLOGY SYLLABUS.

WEEK	SECTION	OBJECTIVE (3 HOURS)	ACTIVITIES (DRAWING ON 3 HOURS PER WEEK)
1	Computer Fundamentals (Class)	Explain the **concept and scope of Information Technology** and distinguish among the **major types of computer systems**.	Define Information Technology and discuss its scope. Conduct a class activity where students identify, research, and present on major computer types (Super Computers, Mainframes, Desktop systems, Mobile devices, Embedded devices) in terms of **processing speed, storage, and portability**.
2	Computer Fundamentals (Class/Lab)	Explain the **functions of the major hardware components** of a computer system and define **units of storage**.	Organize students to research the functions of the major components: input, CPU, primary memory (RAM/ROM), secondary storage, and output. Define and discuss the units of storage (bits, bytes, KB, MB, GB, TB).
3	Computer Fundamentals (Class)	Explain how major hardware components **interrelate** using the IPOS cycle and evaluate the **relative merits of cloud versus local storage**.	Discuss the **Input Processing Output Storage (IPOS) cycle** and how components interrelate within it. Compare cloud and local storage based on assessment criteria such as **capacity, cost, accessibility, and security issues**.
4	Computer Fundamentals (Lab)	Select **appropriate input/output devices** to meet the needs of specified applications.	Engage students in a practical activity (e.g., setting up an exhibition area) where they associate specific I/O devices (OMR, MICR, touch terminals, plotters, digital camera, laser/inkjet printers) with suitable applications (e.g., plotters for architectural output, OMR for multiple-choice sheets).
5	Computer Fundamentals (Class)	Explain the **role of different types of software** and discuss the **relative merits of various**	Invite a guest speaker (e.g., local developer/engineer) to explain **system software** (OS, Utilities) and **application software** (general/special purpose; off the shelf/custom). Illustrate user interfaces (command line, menu-

		types of user interface.	driven, graphical user, touch) using video tutorials and identify the merits of each.
6	Computer Fundamentals (Class/Lab)	**Evaluate the suitability of a given computer system** for a specific purpose and **troubleshoot basic computer hardware problems**.	Discuss system specifications (CPU speed, RAM, secondary storage capacity/speed, I/O devices) needed for purposes like video editing or web browsing. Arrange practical sessions in a computer laboratory for students to perform basic troubleshooting: fixing loose cables or changing printer cartridges.
7	Spreadsheets (Class/Lab)	Explain the **purpose of a spreadsheet** and use **appropriate terminologies** associated with spreadsheets.	Discuss the purpose of a spreadsheet (table of cells, capturing/displaying/manipulating data). Lab session: Identify and define common features like **workbook, worksheet, column, row, cell address, range, label, value, formula, and function**.
8	Spreadsheets (Lab)	Create **advanced arithmetic formulae** and replicate formulae using **relative and absolute addressing**.	Practice creating formulae involving addition, subtraction, multiplication, division, and the use of brackets. Demonstrate and practice the use of **relative addressing, absolute addressing** (e.g., F2) and naming ranges when replicating formulae to other cells.
9	Spreadsheets (Lab)	Use basic **pre-defined system functions**, including conditional and lookup functions.	Complete exercises using essential functions: **SUM, AVERAGE, DATE, MAX, MIN, COUNT, COUNTA**. Introduce and practice conditional functions such as **IF, COUNTIF, VLOOKUP, and PMT**.
10	Spreadsheets (Lab)	Manipulate columns/rows and data using **numeric formatting, sorting, filtering, and Pivot Tables**.	Practice manipulating the worksheet structure (insert/delete/modify columns and rows). Apply numeric data formatting (currency, percentage, comma, decimal places). Practice sorting data (primary/secondary fields, ascending/descending) and filtering (multiple criteria). Create simple Pivot Tables.
11	Spreadsheets (Lab)	Perform **charting operations** and **manipulate one or more worksheets**.	Practice selecting appropriate chart types (Column, Bar, Line graphs, Pie charts) and properly labelling them (titles, axes, data labels). Practice **linking two or more worksheets** to solve problems, ensuring students understand the use of multiple sheets in a single workbook.