REPUBLIQUE DU CAMEROUN
Paix – Travail – Patrie
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REGION DU NORD OUEST
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DELEGATION REGIONALE DES ENSEIGNEMENTS SECONDAIRES
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Inspection Régionale de Pédagogie chargée de l'Enseignement de l'Informatique

REPUBLIC OF CAMEROON
Peace – Work - Fatherland
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NORTH WEST REGION
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REGIONAL DELEGATION OF SECONDARY EDUCATION
……
Regional Inspectorate of Pedagogy in charge of the teaching of Computer Science

SYLLABUS COVERAGE PROGRESSION

Computer science – Lower Sixth Form

2023-2024







CLASS	MODULES	DURATION (H)
LOWER SIXTH	**Module 1:**COMPUTER APPLICATIONS AND SOCIO ECONOMIC IMPLICATIONS	**17**
	Module II: SOFTWARE	**42**
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UPPER SIXTH		
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	Module IX: INFORMATION SYSTEMS	**16**
	Module X: DATABASE SYSTEMS	**44**
	Module XI: SOFTWARE DEVELOPMENT II	**56**
LOWER & UPPER SIXTH	**MINI PROJECTS**	**36**

Discipline: CSC Class: **L6** Number of Modules: **7**

NAME OF Teacher: _____ Grade: _____

Phone Number:_____ Number of Periods a week 06 (4 Theory and 2 Practicals)

Term	Week	Module	Core Knowledge	Examples of actions	Duration
First Term	**Week 1** 04 – 08 SEPT	**Module1:** COMPUTER APPLICATIONS AND SOCIO ECONOMIC IMPLICATIONS	Input devices; Processing devices;	Describe types of computers; Identify with examples, Group and State Characteristics of input and Processing devices.	2H
			Output devices; Storage devices; Peripheral devices	Identify with examples, Group and State Characteristics of output devices Identify State Characteristics of Storage and Peripheral Devices.	2H
			Communication devices	Describe communication & collaboration tools; Exploit communication & collaboration tools; Exploit social media platforms;	2H
	Week 2 11 – 15 SEPT		Monitoring and control system; Simulation and modelling systems;	Identify with examples domains of use of general purpose and other computing applications. Exploit productivity tools (word processor; Desktop publisher)	2H
			Batch and online processing systems. Ergonomics; Green computing Legislation; Copyright laws; Data protection acts; Privacy Open source software	Identify and Compare manual and automated systems Outline social challenges associated with the use of computers outline measures to combat social challenges associated with the use of computers Identify current laws and regulations that prohibit computer crimes Differentiate between legislation and ethical issues related to the use of computers	2H
			Emulate professional, ethical and moral obligations of computing	Awareness of professional, ethical and moral obligations of users of information systems. Ethical stance of professional computing societies: • BCS; • IEEE; • ACM,…	2H
	Week 3 18 - 22 SEPT	**MODULE 2: Exploring SOFTWARE**	Categorization of software.	Identify attributes of a good software; Classify with examples software (system and application); Means of Acquiring software (licensed software, Outsourcing, Freeware, Open Source, Shareware)	2H
				Explain types of system software (Operating system, Utility software, Language translators, Device drivers); Identify application software and categories Evaluate demands in acquiring software (financial, legal, security)	2H

			Explain the purpose of System Software; Describe the scope and range of system software; Describe the need for and the operations of specific pieces of system software; Describe how the compiler functions	Identify the functions System and utility programs for: (Link-loaders, File organization, transfer programs, subroutine libraries; Compilation processes: (lexical analysis, syntax analysis, code generation)	2H
	Week 4 25 – 29 SEPT		Operating systems and their functions Management of processes in a computer	Explain the role of OS in process management; Explain concepts in process management. Process; Sharing of processor; Multi-tasking; Multi-programming; Process creation and termination;	2H
				Concurrent processes; Race condition; Mutual exclusion; Deadlock; Deadlock detection and resolution strategies; Context switching	2H
			Describe scheduling strategies (burst time, quantum time) used by the OS to manage processes	Scheduling; Burst time; Quantum time Explain pre-emptive (Round Robin, Priority, Shortest Remaining Time Next. …) and non-pre-emptive (First Come First Served, Shortest Job First) strategies in processor management.	2H
	Week 5 02 – 06 OCT			Represent process scheduling using a Gantt chart; Differentiate Scheduling algorithms (FCFS, SJF, RR, Priority); Compute: *Average Turnaround time*, *Average waiting time*, for given processes; Explain Starvation and ageing of processes	2H
				Differentiate Scheduling algorithms (FCFS, SJF, RR, Priority); Compute: *Average Turnaround time*, *Average waiting time*, for given processes; Explain Starvation and ageing of processes	2H
			Describe how OS manage memory; Explain the need to run several processes dynamically and safely on a system with physically finite storage resource;	Memory management; Process loading and swapping; Differentiate logical and physical address spaces (logical address vs physical address)	2H
	Week 6 09 - 13 OCT			Memory sharing schemes: Fixed and variable partition; Simple paging and simple segmentation; Virtual memory;	2H

				Addressing modes; Assembly language. Describe Process swapping	
		Revision and Sequential Evaluation.			2H
		Revision and correction of Sequential Evaluation.			2H
	Week 7 16 - 20 OCT		Device drivers; Device controllers; Interrupts; Buffering and spooling	Explain characteristics of mass storage devices; Differentiae spooling and buffering; Differentiate Interrupt Driven I/O and DMA	2H
			Identify file characteristics such as: filename, file extension, file size; Explain file access methods: Sequential and direct; Determine ratings of file access methods; Create and managing files in the computer;	Explain file system (eg FAT16, FAT32, NTFS, ext in unix environment Describe how the file directory is organised (single level, two level, tree structure directories); Outline file attributes; Outline OS operations on a file; Differentiate Sequential Access and direct access; Compare file systems.	2H
			Explain OS security strategy for a computer system; Explain how the OS manages errors in a computer.	Access security: password protection, logins, authentication; Error management in OS: Error detection, Error recovery	2H
	Week 8 23 - 27 OCT	**MODULE 3: COMPUTER NETWORKS, DATA COMMUNICATION AND SECURITY**	Exploration of computer network platform	Components of a network; Network topology Recall types of network (LAN, MAN, WAN); Describe types of network connections (point to point, multipoint)	2H
				Explain features of network operating systems (multitasking, multi-user); Describe network architectures	2H
			Explain how network devices function (MODEM, repeaters, switches, bridges, routers, and gateways …); Describe transmission mediums (cables and wireless); Explain how mobile communication technology work.	Network devices; Transmission mediums; Network configuration; Mobile technology;	2H
			Data Communication	Explain the purpose of data transmission;	2H

	Week 9 30 OCT- 03 NOV		Identify the features of data communication network; Describe data communication modes (simplex, half duplex, duplex); Differentiate between digital data transmission types (parallel, serial);	Determine the differences between the modes of data transmission; Compare serial and parallel transmission based on speed, number of bits transmitted at a time	
			Explain the difference between synchronous and asynchronous transmission; Explain the function of multiplexers, and De multiplexers;	Compare synchronous and asynchronous Differentiate between baseband and broadband transmission; Differentiate between analog and digital signals transmission Differentiate between multiplexers, and De multiplexers;	2H
			Explain data security; Describe safety principles in protecting data and network from malware (viruses, spyware) and unauthorized access; Use antivirus to protect computer network from virus, Trojan horse, worm;	Explain concepts related to data security (privacy, integrity, …); Explain how backup ensures data security;	2H
	Week 10 06 – 10 NOV		Describe different types of error detecting code (parity bits, hamming codes, cyclic redundancy checks/check sum);	Differentiate between Even and Odd Parity. Briefly explain hamming codes, cyclic redundancy, checks and checksum	2H
			Explain measures used to protect computers and networks from intruders and natural disaster (username and password, firewall, data encryption, backup, …); Recognize ownership of digital information and guard against digital theft and plagiarism.	Explain in a report techniques used to fight plagiarism; *Apply safety principles in protecting data and network from malware (scan every incoming document/program before opening or running, …);* *Scan a computer system using an antivirus;* *Set up a firewall and web filtering using an antivirus;* *Save data on cloud storage systems (Google drive)*	2H
			Describe different network standards, and protocols;	Produce a report comparing the OSI and TCP reference models; Discuss internet protocols (TCP, UDP, IP, FTP …)	2H

			Explain the OSI reference model		
	Week 11 13 - 17 NOV		The Internet and it uses History of the Internet; Internet, Intranet and extranet;	Describe the history of the internet; Explain the concepts intranet, extranet and Internet;	2H
			Internet services.	Describe services available on the Internet (e-commerce, e-learning, e-banking …); Exchange information using email; Use search engines; Doing business online knowing safety and security risks in participating online; Change privacy settings.	2H
			Social Media and Digital Marketing	Identify and describe briefly different social media platforms. Describe briefly types of digital marketing.	2H
	Week 12 20 - 24 NOV	**Revision and Sequential Evaluation.**			2H
		Revision and correction of Sequential Evaluation.			2H
		Practical (Working with internet and search engines)			2H
Second Term	**Week 13** 27 NOV – 01 DEC	**MODULE 4: DATA STRUCTURES AND ALGORITHMS**	Introduction to data structure	Recognise how data is grouped for processing by the computer; Classify data into various types Simple data types **(**Character; Integer; Real or float; Boolean)	2H
			Complex data types (Arrays (1D & 2D); String; Records; List)	Represent data into compound structures; Specify how elements shall be accessed; Specify possible operations that can be performed on each structure.	2H
				Declare an array of elements ; Represent a range of data of same type as an array of the type; Declare string data as an array of characters; Represent heterogeneous data (data of different types) describing a particular object as a record ; Declare a list (enumeration) in a programming language;	2H
	Week 14 04 - 08 DEC			Write algorithms to manipulate data in arrays, strings, records and lists	2H
			Using complex data types	Explain how pointers work; Explain how data is inserted and accessed in: Stacks, Queues, Binary trees (binary search tree as particular case);	2H
				Hash coded, tables; Describe linked lists as pointers. Compare the pointer driven(variable) data structures with fixed data structures (like arrays)	2H

	Week 15 11 - 15 DEC		Overview of Algorithms	Describe forms of algorithms; Describe characteristics of a good algorithm ; Write steps to solve a problem Model the solution to a complex problem in a series of precise and finite set of steps; Distinguish good and poor algorithms with respect to the spelled out characteristics	2H
			Algorithmic constructs (Control structures)	Explain the use of various control structure(Sequence, Choice or selection, Loop or iteration) by examples Use constructs to show how a problem can be solved	2H
			Representing algorithms	Interpret algorithms represented in various ways; Convert an algorithm from one form to another. Represent an algorithm in various ways (Natural language, Flowchart; Pseudo code)	2H
	Week 16 02 - 05 JAN		Algorithmic Design strategies	Break down a complex problem into simpler solvable forms using; Top-down design; Bottom-up design; Step-wise design; Modular design	2H
			Commonly used sorting and searching algorithms	Devise strategies to carry out sorting or searching; Explain Sorting (insertion sort, merge sort, bubble sort) Write algorithms to sort elements in arrays and lists.	2H
				Searching (sequential search, binary search) algorithms. Write algorithms to search elements in arrays and lists. Perform sort and search manually	2H
	Week 17 08 - 12 JAN		Recursive Algorithm Express functions in terms of itself; Represent recursive functions; Illustrate the role of stack in processing recursive functions;	Recursive problems Fibonacci numbers, Factorial, Towers of Hanoi; Stacks.	2H
				Assess the limitation of recursion	2H
			Correctness and Efficiency of Algorithms	Evaluate efficiency of an algorithm in terms of number of steps Explain space and time complexity	2H
	Week 18 15 - 19 JAN			Dry run of algorithms; Algorithm testing. Big-Oh Notation	2H

		Revision and Sequential Evaluation.			2H
		Revision and correction of Sequential Evaluation.			2H
	Week 19 22 - 26 JAN	**MODULE 5: PROGRAMMING**	Classification of programming languages.	Concept of a program Low level language features High level language feature Differentiate between Program and algorithm Differentiate between Low level and High Level Programing Languages.	2H
			Programming paradigm	Explain paradigms (Imperative, Declarative, Object oriented, Functional, Event driven);	2H
				Explain the concepts of Object-Oriented Programming(object, class, encapsulation, inheritance, polymorphism); Justify the application and advantages	2H
	Week 20 29 JAN - 02 Feb		Syntax and semantics. Variables	Identify the main elements of a program and give examples; (Coding, syntax, semantics, Pragmatics) Practice how to declare and use various program elements (Identifier, Variable/identifiers, Constant, Reserved word, Character sets, Simple data types) in a code; Variables; Local and global variables;	2H
			Program implementation and execution	Explain various program structure; Code and execute programs Explain the importance of documentation in programming; Program execution Explain the role of subroutine in a program.	2H
			Programming environment	Identify important elements to write and run a code Install, write and run simple codes in an IDE using programing tools **(**Compiler, Editor, Debugging.**)**	2H
	Week 21 05 - 09 FEB		Program structure	State elements of standard program structure (Program header or pre-processor directives, Variable declaration, Constant declaration, Body of the program, Begin/end notations); Assignment notation.	2H

			Writing error free codes (Debugging)	Perform dry running to determine output. Identify and use tools for error checking; (Syntax, logic, and run time errors) Perform program testing; Describe types of debugging; Debugging features (breakpoints, watch points and instruction tracing); Test cases	2H
			Implementation of recursion	Explore mathematical representation of recursive functions (base case and general case) Recursive problems (Fibonacci numbers, Factorial, Towers of Hanoi ...)	2H
	Week 22 12 – 16 FEB		Use control structures to solve repeated tasks.	Iteration; counters; Looping structures While loop**,** Repeat loop, For loop;	2H
			Functions and procedures;	Differentiate between function and procedure Explain advantages of the use of functions or procedures; identify when to use functions in programming;	2H
			Abstract or complex data types.	Declare complex data types in a program (arrays, strings and records); Need for complex data types as composition of standard data types; Access and manipulating data in complex structures	2H
	Week 23 19 - 23 FEB		Sort algorithms;	Write simple sort algorithm Explain different types of sort (Bubble sort, insertion sort, merge sort, Selection sort, Shell sort, Quick sort)	2H
				Use a sorting technique to sort elements in an array;	2H
			Search algorithms	Explain search algorithms Write simple Search algorithm (Sequential**,** Binary search, Random Search)	2H
	Week 24 26 FEB -01Mar	**Revision and Sequential Evaluation.**			2H
		Revision and correction of Sequential Evaluation.			2H
		Practical: Implementing Sorting and Searching in an IDE			2H

Third Term	**Week 25** 04 - 08 MAR	**MODULE 6: SOFTWARE DEVELOPMENT I**	Fundamental concepts of software development	Explain Software development; Establish the purpose of software development; Explain the activities involved in software development	2H
			Software development processes (models)	Describe software development models; (Waterfall; RAD) Explain advantages and limitations of each software development model;	2H
				Describe software development models; (Spiral; Prototype Explain advantages and limitations of each software development model; Assess criteria for applicability of various models	2H
	Week 26 11 - 15 MAR		System Development Life Cycle(SDLC) Developing Software requirements Analysis	Explain software requirement analysis; (Software requirement and specification; Technical requirements; User requirement)	2H
			Design process in software	Identify components of a software to be designed; Explain and Specify design elements;	2H
				Data types and data structures design; Architectural design; Interface design; Test data;	2H
	Week 27 18 - 22 MAR		Verification and validation Process	Explain software verification and validation methods; Differentiate between validation and Verification.	2H
				Explain testing mechanisms of a developed software, using any of the following testing methods: Unit testing; Integration testing; Smoke testing; Regression testing ; Acceptance testing, black box testing. Differentiate between Alpha and beta testing.	2H
			Management of software development process	Explain project management activities (Proposal writing, Project planning	2H
	Week 28 25 - 28 MAR			scheduling, Project monitoring and reviews, Personnel selection, Evaluation report writing and Presentation.)	2H
			Practical DataBase Development using Assess		2H
			Practical DataBase Development using SQL		2H

	Week 29 15 - 19 APR	**MODULE 7: COMPUTER SCIENCE PROJECT Practical**	Starting a business	Identify businesses related to basic skills Explain customer needs Interviewing business persons Documenting findings	2H 2H 2H
	Week 30 22 - 26 APR		Job planning Implementing a project development plan	Identify all use cases Break down the job into parts Assign approximate timelines for each part Identify required hardware Model a database Costing Explain techniques used to run meetings.	2H 2H 2H
	Week 31 29 APR-03 May		Job execution	Implement a client based project in a professional manner. Use appropriate techniques to plan the implementation of a sustained project requiring the allocation and management of multiple resources.	2H 2H 2H
	Week 32 06 - 10 MAY		Job termination Do a demo (Explain functionalities and cost effectiveness)	Make a formal presentation of a final product to Clients. Obtain acceptance of the implementation.	2H 2H 2H
	Week 33 13 - 16 MAY		Automating accounting, mathematical, statistical and analytical procedures	Carrying out statistical, financial etc. analysis, calculations and projections for education, businesses Do financial and statistical analysis using spreadsheet functions (sum, count, product, if, sumif, countif, sumproduct, vlookup, ...); Produce charts of relation between two or more categories ; Link worksheets with formulae;	2H 2H 2H

	Week 34 20 - 24 MAY		Implementing RDMS Collecting Organizing, storing and securing data to be accessed in various ways.	Recall main features of an RDBMS; Demonstrate user skill in the use of a relational;	2H
				DBMS(MS Access or Open/Libre Office Base)	2H
				Use structured query language (SQL).	2H
	Week 35 27 - 31 MAY		Using databases for web development**.** Describe the general process of publishing a database online;	Linking a database to a webpage;	2H
				Develop RDMS using PHP; MySQL; HTML	2H
			Identifying and executing sample project	Using; PHP; MySQL; HTML	2H
	Week 36	**Revision and Sequential Evaluation.**			2H
		Revision and correction of Sequential Evaluation.			2H
		Practical: Working with advanced excel Formulars			2H