REPUBLIQUE DU CAMEROUN
Paix – Travail- Patrie

MINISTERE DES ENSEIGNEMENTS SECONDAIRES

INSPECTION GENERALE DES ENSEIGNEMENTS

INSPECTION DE PEDAGOGIE CHARGEE DE L'ENSEIGNEMENT DE L'INFORMATIQUE

REPUBLIC OF CAMEROON
Peace- Work- Fatherland

MINISTRY OF SECONDARY EDUCATION

INSPECTORATE GENERAL OF EDUCATION

INSPECTORATE OF PEDAGOGY IN CHARGE OF THE TEACHING OF COMPUTER SCIENCE

Teaching Syllabus and Course Specifications
For
Technical and vocational education

Observe the environnements and choose better study options for a fulfilled life

SIXTH YEAR TECHNICAL AND VOCATIONAL EDUCATION

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I. GENERAL PRESENTATION OF THE TEACHING SYLLABUS

The rapid evolution of Information and Communication Technologies (ICT) has over the years engendered a remarkable progression of applications in everyday life. Be it in the areas of economy, education, or every other sector of the society, everyone is nowadays concerned with the ubiquitous use of digital technology.

The computer science syllabus for technical and vocational education is aimed at training Cameroonian citizens for immediate insertion in the job market. This syllabus has therefore been elaborated following the Competence-based Approach (CBA). This pedagogic approach takes into account its didactic evolution and gives a proper orientation to the learners of computer studies. The syllabus takes advantage of the gains from the first cycle and aims at building capacities of technical and vocational learners in the domains of algorithms, programming, computer maintenance, networking, creation of digital content and Information Systems. The general objectives are listed below:

- Train citizens rooted in their culture and open to the world thereof
- Develop coherent and logical reasoning
- Develop creative and analytic thinking
- Communicate with the aid of computer languages
- Solve basic computer problems
- Produce a list of hardware and software requirements

To attain these objectives, this computer science syllabus for lower sixth technical and vocational forms is subdivided into three (03) modules to be covered in fifty (50) hours.

II. COMPETENCES OF THE LEARNER BY THE END OF THE SECOND CYCLE

The syllabus aims at giving the learner a global perspective, enabling the effective use of ICT tools to:

- ✓ Solve problems in varied situations in their community
- ✓ Communicate
- ✓ Vigorously use logical thinking
- ✓ Judiciously use the enormous potential of digital technology

More specifically, the learner should be able to harness ICT knowledge and skills acquired in the teaching/learning process to:

- ➲ Manage storage devices
- ➲ Ensure the security of data, software and/or digital environment (Antivirus, Firewall, Encryption, password etc.)
- ➲ Use of appropriate tools to produce a spreadsheet or a presentation
- ➲ Determine the necessary hardware and software needed in a technical project
- ➲ Write simple algorithms
- ➲ Write simple programmes in C language
- ➲ Use iterative structures
- ➲ Apply rigorous logical thinking in writing simple algorithms
- ➲ Dry run an algorithm;
- ➲ Judicious use of the enormous potential of social media
- ➲ Use of appropriate software to elaborate a technical project
- ➲ Plan and manage a technical project

III. LEARNING DOMAIN AND CORRESPONDING DISCIPLINES

The Computer Science syllabus for the Sixth Year Forms of Technical and Vocational Education concerns the following fields:

- *Electrotechnics;*
- *Electronics;*
- *Mechanics;*
- *Building Construction;*
- *Technology*

This syllabus which is in the learning domain of Science and Technology, regroups the following disciplines: Mathematics, Biology, Physics, Chemistry, and Technology.

IV. CONTRIBUTION OF THE COMPUTER SCIENCE SYLLABUS TO THE LEARNING DOMAIN

Contemporary social development makes Computer Science and Information and Communication Technologies a highly transversal discipline. It helps learning of other subjects by putting at the disposal of students, Computer-Aided Learning Tools, and good practices with the use of the Internet.

The teaching of algorithm and programming enables students to develop: the culture of analytic thinking, rigorous and coherent reasoning. These are indispensable skills required in expressing solutions in different domains.

The learner will also have acquired skills to manipulate the computer and to use digital production tools during teaching/learning activities and in other areas as consultation, documentation, research, digitilization of data, verification of the results obtained by computer processing, recognition and respect for the concept of intellectual property, all things that will further lead to the development of a sense of honesty and responsibility.

V. CONTRIBUTION OF THE COMPUTER SCIENCE SYLLABUS TO REAL LIFE

All sectors of life are affected by the prodigious development of Information and Communication Technologies. Moreover, Computer Science as a transversal discipline, perfectly fits into the life areas of the curriculum, as shown in the table below:

LIFE DOMAINS	CONTRIBUTION
Family and social life	- Manipulating electronic devices; - Communication and entertainment; - Sensitization
Economic life	- Creating economic goods; - Marketing; - Rational management of goods and services; - Implementation of management systems; - Self-employability;
Environment, Well-being and Health	- Environmental transformation; - Access to medical and environmental information; - Organize and process data
Citizenship	- Respect for intellectual property - Protection of privacy; - Popularizing ethical values.
Media and communication	- Manipulation of computer and telecommunications tools; - Creating digital content; - Responsible use of the means of communication

VI. PRESENTATION OF FAMILY OF LIFE SITUATIONS IN THE SYLLABUS

A life situation is a circumstance of action or reflection in which a person may find himself. A family of life situation refers to life situations that have at least one common property.

The syllabus of the Sixth Year forms of Technical and Vocational Education explores families of the following life situations:

- *Elaborate reasoning through writing and dry run of simple algorithms*
- *Use digital production tools in a specific ICT environment*
- *Responsible use of social media: Creating a profile, presenting your activity*
- *Produce a list of requirements*

- *Describe some software and data protection techniques*
- *Use storage media*
- *Describe fundamental concepts of computer security*
- *Create digital content*
- *Draw with the aid of an appropriate software*
- *Plan projects with the aid of GANTTPROJECT software*

VII. COMPETENCES OF SIXTH YEAR FORMS

A competence is the ability to mobilize resources to perform a task correctly.

The competences to be developed are:

- *Determine needs of hardware and software by specialty*
- *Describe the fundamental concepts of computer security (confidentiality, integrity, availability)*
- *Describe some software and data protection techniques (antivirus, firewall, encryption, password, etc.)*
- *Produce an invoice using a spreadsheet*
- *Write simple algorithms;*
- *Dry run an algorithm*
- *Use iterative structures*
- *Translate an algorithm into C language*
- *Run a C program in an appropriate IDE*
- *Use social media*
- *Carry out a project with the aid of specialty software*
- *Use GanttProject software*

VIII. SUMMARY TABLE OF MODULES

The table below shows the different modules of the syllabus.

MODULES	DURATION
Module 1: Exploring Digital Environment and Computer Security	10H
Module 2: Computer Networks, Internet, Social Impact of ICT, Algorithms and C Programming	22H
Module 3: Project Management	18H

IX. PRESENTATION OF THE MODULES OF THE SYLLABUS

MODULE N° 1: Digital Environment and Computer Security

Duration: 10 H

This module aims to get learners to determine the hardware and software tools needed to carry out a project, and also to configure, properly use and secure a digital environment. In this regard, emphasis is laid on the maintenance of storage media and the mastery of appropriate tools to carry out a technical project.

CONTRIBUTION OF THE MODULE TO CURRICULAR GOALS

At the end of this module, the learner should be able to:

- Ensure a few maintenance tasks on a disk
- Connect/use the following peripherals: printer; Scanner; projector;
- Archiving data to media
- Determine appropriate hardware and software for a given project
- Outline the fundamental principles and benefits of computer security
- Describe some security measures of your workspace:
    - ✓ Manage user accounts (administrator and guest);
    - ✓ Create passwords
    - ✓ Authenticate users
- Outline the importance of updating an antivirus
- Apply file protection techniques
- Describe some data protection techniques such as encryption, compression, use of antivirus, etc. …
- Manipulate spreadsheets formulas and dedicated functions.

CONTRIBUTION OF THE MODULE TO THE LEARNING DOMAIN

This module aims at guiding the learner to master the work environment. It enables the learner to:

- Perform basic maintenance tasks
- Manipulate digital production tools (spreadsheets)
- Outline hardware and software needs

- Protect data using security techniques such as password, biometric tools, anencryption etc. …

CONTRIBUTION OF THE MODULE TO LIFE DOMAIN

This module enables the learner to:

- Carry out maintenance and conveniently connect/disconnect devices;
- Assess the quality of a proposed solution for solving a specific problem;
- Configure and properly maintain the work environment;
- Secure data and work environment

TABLE OF THE MAIN COMPONENTS OF MODULE 1: Digital Environment and Computer Security

CONTEXTUALISATION		COMPETENCIES TO BE ATTAINED				RESOURCES	
Family of life Situations	**Examples of life Situations**	**Categories of Action**	**Examples of Actions**	**Basics (Core) Knowledge**	**Attitudes**	**Didactic materials**	**Duration**
EXPLORING DIGITAL ENVIRONM ENT	Producing a list of requirements	Outlining appropriate hardware and software needs	● Determining hardware components to solve specific problems (computer type, printer type, USB stick, hard drive, CD, DVD, tracing table...) ● Determining software tools to solve a problems of the specialty (text processing, spreadsheets, specialized software, ...)	● Driver; ● Partitioning; ● Formatting; ● Burning/Archiving	● Team spirit ● Curiosity and focus ● Collaborative Work ● Initiative ● Creativity ● Honesty ● Caution	● Computers ● Peripherals ● Digital camera ● USB key	**4H**

CONTEXTUALISATION		COMPETENCIES TO BE ATTAINED				RESOURCES	
Family of life Situations	**Examples of life Situations**	**Categories of Action**	**Examples of Actions**	**Basics (Core) Knowledge**	**Attitudes**	**Didactic materials**	**Duration**
Exploring Computer Security	● Using storage devices; ● Describing Fundamentals of security ● Describing basic software and data protection techniques	● Describing Fundamentals of security and basic software and data protection techniques	● Outline the fundamentals and importance of computer security ● Describe basic security techniques in the work place ✓ Manage user accounts (administrator and guest); ✓ Create passwords ✓ Authenticate users ● Outline the importance of updating an antivirus ● Apply file protection techniques ● Describe some data protection techniques such as encryption, compression, use of antivirus, etc. …	● Computer Security ● Confidentiality ● Integrity ● Availability ● Authentication ● Encryption ● Access control ● Login ● Password ● Administrator ● Types of accounts ● Antivirus ● Update	● Team Spirit ● Collaborative Work ● Initiative ● Honesty ● Caution	● Computers ● Digital cameras ● USB Keys	**6h**

MODULE N° 2: Computer Networks, Internet, Social Impact of ICT, Algorithms and C Programming

Duration: 22 H

This module introduces the learner to the use of computer networks. It also enables the learner to create and maintain a social media profile and become familiar with the concept of algorithm and C programming.

CONTRIBUTION OF THE MODULE TO CURRICULAR GOALS

This module enable the learner to:

- Create social media profile
- Administer web page
- Use a multimedia file for advertising, sensitization, campaign, etc. …
- Share digital resources using computer networks
- Post personal digital contents on social media;
- Use social media in a responsible manner
- Write simple algorithms
- Write simple Programs in C-language and run them using an appropriate IDE

CONTRIBUTION OF THE MODULE TO LEARNING DOMAIN

The module aims to introduce learners to the use of computer networks, social media and C-language programming.

CONTRIBUTION OF THE MODULE TO LIFE DOMAINS

This module enables the learner to:

- Set up a computer network and explore the advantages it offers
- Take advantage of the vast potential of digital technology with the use of social media
- Develop logical thinking and creativity by writing algorithms and their implementation in the C language.

TABLE OF THE MAIN COMPONENTS OF MODULE 2: Computer Networks, Internet, Social Impact of ICT, Algorithms and C Programming

CONTEXTUALISATION		COMPETENCIES TO BE ATTAINED				RESOURCES	
Family of life Situations	**Examples of life Situations**	**Categories of Action**	**Examples of Actions**	**Basics (Core) Knowledge**	**Attitudes**	**Didactic materials**	**Duration**
EXPLORING COMPUTER NETWORK AND INTERNET	● Exchange of data in a network ● Computer ethics ● Collaboration through digital channels ● Sharing of information and digital content	Describing computer networks	● Listing functions of computer networks ● .Describing types of wired networks ● .Describing types of wireless networks ● .Describing types of network topologies ● .Describing types of network architecture ● Identifying main network equipment ● Describing types and classes of IP addresses ● Outlining the role of some network equipment (repeater, gateway, access point, bridge, switch, hub, router, MODEM) ● Transferring files using Bluetooth ● Describing transmission media	● Computer network ● LAN, MAN, WAN, PAN ● Internet ● WIFI, Bluetooth ● Computer network topologies ● Architecture ● IP ● IPV4/IPV6 ● ●	● Team spirit ● Collaborative work ● Creativity ● Honesty ● Prudence	● Computers and their peripherals ● digital camera ● USB key	**6h**

CONTEXTUALISATION		COMPETENCIES TO BE ATTAINED				RESOURCES	
Family of life Situations	**Examples of life Situations**	**Categories of Action**	**Examples of Actions**	**Basics (Core) Knowledge**	**Attitudes**	**Didactic materials**	**Duration**
EXPLORING SOCIAL IMPACT OF ICT	● Exchange of data in a network ● Computer ethics ● Collaboration through digital channels ● Sharing of information and digital content ● Management of digital identity ; ● Creation and management of a blog ● Promote an activity ● Advertise or sales ● .Explore digital channels	Using social media	● Listing examples of social media platforms ● Describing types of social media platforms ● Creating social media profile ● Managing a web page ● Creating blogs based on templates ● Creating and managing groups on social media ● Publishing files on social media ● Describing services available on social media ● Describing limitations of social media ● Publishing files in social media ● Describing the services of social media ● Outlining deviant behaviours in using social media	● Social network ● Social media ● Blog ● Profile ● Post ● VoIP ● Followers ● Fake news ● E-marketing ● E-commerce	● Team spirit ● Collaborative work ● Creativity ● Honesty ● Prudence	● Computers and their peripherals ● digital camera USB key	**6h**

CONTEXTUALISATION		COMPETENCIES TO BE ATTAINED		RESOURCES			
Family of life Situations	**Examples of life Situations**	**Categories of Action**	**Examples of Actions**	**Basics (Core) Knowledge**	**Attitudes**	**Didactic materials**	**Duration**
EXPLORING ALGORITHMS AND C PROGRAMMING	● Developement of logical reasoning to solve problems	● Use of control structures	● Describing the steps used in solving problems ● Identifying control structures ● Using iterative structures ● Writing simple algorithms ● Running an algorithm ● Drawing a flowchart	● .Algorithmic thinking ● Algorithm ● Variable ● Constant ● Instruction ● Control structure ● Initialisation ● Loops ● Flowchart	● Team spirit ● Collaborative work ● Creativity ● Honesty ● Prudence	● Computers and their peripherals ● Digital camera ● USB key	**6h**
	● Execution in console mode	● C-language programming	● Listing some examples of programming languages ● Using a C IDE (Codeblocks, DevC++) ● Writing the structure of C program ● Translating simple algorithms to C ● Running a C program ● Declaring variables and constants ● Using operators (arithmetic, logic, comparison) ● Including the libraries ● stdio.h, stlib.h, math.h et conio.h ● Using the standard input/output functions (scanf, printf) and the C structures: for, while	● IDE ● Compilers ● Libraries ● Program ●	● Team spirit ● Collaborative work ● Creativity ● Honesty ● Prudence	● Computers and their peripherals ● Digital camera ● USB key	**8H**

MODULE N° 3: Project Management

Duration: 18 H

The module aims at helping the learner to:

- Develop skills related to the planning of a technical project
- Create technical drawings
- Establish project quotations using a spreadsheet

CONTRIBUTION OF THE MODULE TO CURRICULAR GOALS

At the end of this module, the learner should be able to:

- Create technical drawings with the aid of appropriate software
- Contribute to the implementation of a project through planning, estimating a quotation, and creating an invoice using a spreadsheet

CONTRIBUTION OF THE MODULE TO LEARNING DOMAIN

The module develops the learner's organizational skills enabling them to enhance their work with regard to project planning and budget estimation.

CONTRIBUTION OF THE MODULE TO LIFE DOMAINS

This module enables the learner to:

- Effectively plan work to be done in a project
- Work systematically
- Be Self-employed through the provision of services in technical drawing.

TABLE OF THE MAIN COMPONENTS OF MODULE 3: PROJECT MANAGEMENT

CONTEXTUALISATION		COMPETENCIES TO BE ATTAINED				RESOURCES	
Family of life Situations	**Examples of life Situations**	**Categories of Action**	**Examples of Actions**	**Basics (Core) Knowledge**	**Attitudes**	**Didactic materials**	**Duration**
EXPLORING PROJECT MANAGEMENT	● Designing/Modelling a project ● Developping a project plan ● Evaluating a project ● Producing an invoice ● Analysing a project ● Interpreting results; ● Analysing data ● Decision making	Creating a technical drawing with an appropriate software (Visio, …)	● Exploring the user interface of the specialty software ● Identifying the respective predefined models and templates ● Using models and prototypes ● Inserting illustrations, components, diagrammes, links and texts ● Saving a project ● Creating a technical drawing ● Printing a technical drawing	● Working with a spreadsheet ● Working with a specialty software ● Drawing vocabulary	● Team work ● Collaborative work ● Creativity ● Honesty ● Prudence	● Computers ● Peripherals ● Digital camera ● USB disk	**8H**
		Use GANTPROJECT	● Creating tasks ● Defining constraints of tasks ● Defining relationships between tasks. ● Creating resources ● Assigning resources to tasks ● Generating charts (PERT ; GANTT) ● Identifying critical paths ● Estimating the duration of projects	● Working with GANTTPROJECT ● Concepts (task, activity, project, relationship, critical path, budgeting)	● Team work ● Collaborative work ● Creativity ● Honesty ● Prudence		**6H**
		Make an estimative and quantitative quotation	● Creating complex quotations using spreadsheets ● Defining print area ● Printing quotations and invoices				**4H**