The New Senior Secondary Curriculum for Sierra Leone

Subject Syllabus for Information & Communication Technology (ICT)
Subject stream: Sciences and Technologies

This subject syllabus is based on the National Curriculum Framework for Senior Secondary Education. It was prepared by national curriculum specialists and subject experts.

SSSC
Senior Secondary School Curriculum

Curriculum elements in Information & Communication Technology (ICT) – a core subject

Subject Description

Information and Communication Technology forms part of the core curriculum for students specializing in sciences and technologies in Sierra Leone. It is intended to give students the skills and understanding to use computers in both their current studies and in various occupations in their future lives. The course offers the ideal forum for students to apply ICT skills in a practical way, particularly in presenting routine tasks, major work, and key assignments across the full spectrum of the curriculum.

The achievable goals of developing accuracy, neatness and Presentation skills can generate a sense of pride in work done by students which enhances self-esteem and motivates students to maximise their potential in other aspects of their studies as well as in their future professional and personal lives.

Structure of the Syllabus Over the Three Year Senior Secondary Cycle

	SSS 1	SSS 2	SSS 3
Term 1	Data Representation • Data types e.g., integers, real numbers, strings etc. • Number bases with special reference to binary, decimal, and hexadecimal • Units of data storage. Introduction to Information Systems • Meaning of information system • Knowledge of the different types of information systems • Attributes of good information	Introduction to Digital • The Internet • Computer crime	Technology Culture • The role and impact of Information Technology on everyday life e.g. • E-business, e-health, e-mail, e-learning, • Computer Based Training, • Computer Assisted Manufacturing, Computer Aided Design, etc. • Knowledge of media types e.g., digital videos and • Digital sounds, voice over internet protocol (VOIP), voice recognition system, etc.
Term 2	Word Processing • Creating, editing, and formatting documents • Business documents e.g., memos, reports etc.	Desktop Publishing • Creating, editing, and formatting documents • Printing publications • Spreadsheet	Software • System software e.g., operating systems and their functions • Utility programmes and their uses • Types of application programs

	• Mail merge • Printing of documents	• Creating, editing, and formatting do Sorting and querying for information. • Creating graphs and charts to represent data in worksheet • Working with functions • Data security use of passwords	• Software licensing considerations
Term 3	Networking • Network concept • Types of networks • Network Topology • Network Architecture • Network configuration • Communication of data on networks • Data security on networks	Introduction to Programming • Flow charts • Algorithms and data structures • Program development life cycle • Programming languages • Web design using Hypertext • Mark-up Language (HTML) • Practical knowledge of BASIC and HTML • Programming languages	Data Base Management System • Designing and creating data bases. • Working with queries • Working with forms • Working with reports Hardware • External components and their functions • Internal components and their functions • Computer Diagnostics and maintenance

Teaching Syllabus

Senior Secondary Level 1

Topic/Theme/Unit	Expected learning outcomes	Recommended teaching methods	Suggested resources	Assessment of learning outcomes
Data Representation • Data types e.g., integers, real numbers, strings etc. • Number bases with special reference to binary, decimal and hexadecimal. • Units of data storage.	Students will be able to • Understand what a hexadecimal number are • Understand why hexadecimal is a useful number system • Use at least one method to represent a fractional number • State the differences between signed and unsigned integers • Convert from one base to another • Ways of representing negative numbers in binary	• All must watch the video on what hexadecimal numbers are. • Use the HTML colour picker to see how […] • All must know the difference between signed and unsigned integers. • Use at least one method to represent a fractional number • Most Grade D/E should appreciate the difficulty of representing floating point numbers using binary digit	• Tally chart • Dot plot • Colum graph • Pie chart • A colourful set of posters for understanding and presenting data table	• Describe measurable knowledge, skills, and behaviours • Students should be able to demonstrate as a result of completing • The program. • Questions and answers, oral, practical work, multiple choice questions, formative assessment, summative assessment
Introduction to Information Systems • Meaning of information system • Knowledge of the different types of information systems • Attributes of good information	Students will be able to: • Develop relevant programming abilities • Apply business management techniques • Capability and initiative to lead organization through technological change	• Lecturing • Multidisciplinary and point out relevant aspects • Teamwork • Peer learning • Information system education	• People • Hardware • Software • Network • Internal and external storage devices	• Analyse and synthesize business information and systems to evaluate strategic alternatives

Introduction to Digital • The internet computer crime	Students will be able to: • The key concept of a digital • Think critically about information practice self-reflection and collaborate across disciplines • Find, evaluate and share information online	• Smart class • Being digitally updated • Encouraging online test • Supporting online test • Creating communities	• Simulation • Animation • Quiz • Electronic • Textbook • Learning object	• Questions and answers, oral, practical work, multiple choice questions, formative assessment, summative assessment, • Students' knowledge and competence in terms of desired learning goals
Technology Culture • The role and impact of information technology on everyday life e.g. • E-business, e-health, e-mail, e-learning • Computer based training • Computer assisted manufacturing, computer aided design, etc. • Knowledge of media types e.g., digital videos and digital sounds, voice over internet protocol (VOIP), voice recognition system, etc.	Students will be able to: • Effectively communicate through writing and speech ways and how digital media productions make meaning • Utilize an interdisciplinary perspective in order to understand the global changes brought about by digital media • Demonstrate competency with technology for designing and distributing digital works in various mediums	• Develop media literacy on global scale • Tap into global knowledge networks • Discover personal opinions behind global issues. • Engage a global audience through online publishing • Harness the power of virtual simulation to understand global complexity and create solutions.	• Local project • Cultural industries • Green culture as the software resource • The prevailing theoretical approach • Cultural heritage in a changing word	• Graphic responds which include any item to which student responds by drawing moving and selecting graphic region • Innovation in cultural contexts • Hot texts in which students select or rearrange, sentences or phrase within a passage

Senior Secondary Level 2

Topic/Theme/Unit	Expected learning outcomes	Recommended teaching methods	Suggested resources	Assessment of learning outcomes
Word Processing • Creating, editing and formatting documents, business documents e.g., memos, reports etc. • Mail merge • Printing of documents	Students will be able to: • Format text and to use style • Create, edit, save and print document with listed and table • Add a header and footer to a document • Indicate the names and function of the word interface component • Add a graphic to a document	• Digital library • Writing difficulties • Writing industries through the use of computer-based training techniques	• Worksheet • Computer • Microsoft Word • Activity card • External keyboard • Produce a range of printed documented by selecting different printers	• Students will create document that demonstrate proficiency in the use of word processing • Questions and answers, oral, practical work, multiple choice questions, formative assessment, summative assessment
Desktop Publishing • Creating, editing, and formatting documents • Printing publications	Students will be able to: • Identify desktop publishing terminology and concept • Manipulate text and graphics • Create effective designs based on design principle • Performs proofs before the original press • Present project in an effective way • Create typographic solution	• Graphic design • Build a publication sample • Undo and redo • Type family • Visual communication • Page layout • Make a copy	• Software • Adobe system • Html • Publish RGB • Adobe rate magazine	To be able to distinguish between desktop publishing and other form of document production with reference to purpose, development process.
Spreadsheet • Creating, editing, and formatting documents • Sorting and querying for information	Students will be able to: • Preview and print worksheets • Create and modify charts • Enter and edit data	• Sample spreadsheet to analyse data • Students calculate an answer without developing a	• Spreadsheet page • Microsoft Excel training https://www.mrexcel.com/	• Pre/post exam • Standardized test • Use spreadsheet software to prepare

• Creating graphs and charts to represent data in worksheets • Working with functions • Data security use of passwords	• Indicate the names and function of the spreadsheet/excel interface component • Format data and cell	coherent system for analysing a problem • Do not share your excel solution with others • Keep it simple using simple commands	• Hubs ports free eBooks and blog posts	various charts- pie, bar, line, column, and area • Performance tests
Software • System software e.g., operating systems and their functions • Utility programmes and their uses • Types of application programs • Software licensing considerations	Students will be able to: • Describe the essential characteristics and identify using example, the connection between the characteristics of good software system • Identify the different kinds of model used in the development of software and describe the relationship between model, viewpoints and software development • Explain the benefits of the unified modelling language (UML)	• Collaborative teamwork • Team base learning • Data analysis and problem sourcing	• Data base • Webpage • Video/audio stream • File • Data objects	• Crate and print your own texts, exam, quizzes, evaluation, and other training assessments • Scan completed form with any imaging device (scanner, copier, scanning app)

Senior Secondary Level 3

Topic/Theme/Unit	Expected learning outcomes	Recommended teaching methods	Suggested resources	Assessment of learning outcomes
Networking • Network concept • Types of networks • Network topology • Network architecture • Network configuration • Communication of data on networks	Students will be able to: • Articulate to form a network solution • Describe the hardware, software, and services that comprise an enterprise network	• The using of visualization object such as network stimulators • Multimedia application • Precipitating active learning paradigm	• Servers • Client • Network interface card • Shared data • Local operating system • Transmission media • Shared printer	• Routing and switching student scores on evaluated lab work • Networking fundamental exam • By examining sample of student work

• Data security on network	• Demonstrate expertise in configuring host and network level technical security controls, to include host fire ware, user, access controls	• Practical hand on laboratory exercises		• Provide graph table for resulting trends
Introduction to Programming • Flow charts • Algorithms and data structures • Program development life cycle • Programming languages • Web design using Hypertext • Mark-up Language (HTML) • Practical knowledge of BASIC and HTML • Programming languages	Students will be able to: • Explain programming basics • Begin using the java programming language • Display output on the console • Explain the differences between syntax errors, routine errors, and logic errors	• Stick to one language • Use peer instruction • Remember that novices are not experts • Use authentic task • Use worked examples with labelled sub-goals	• Code academy • Plural sight • Audacity • Team tree house • HTML • PHP	• Solving programming problem • Integrate learning to solve computing problem
Data Base Management System • Designing and creating data bases • Working with queries • Working with forms • Working with reports	Students will be able to: • Explain storage media and their basic properties • Understand how different indexing techniques work • Understand why and how data needs to be indexed • Describe how data is stored using storage medium in a DBMS	• Video lessons • Text files and worksheet for course work • Audio file for lecture • Contact data for pupils • Group work	• Hardware • Software • Data producer • Database access language	• Database management system exam outcomes • Describe the role of a database management system

Hardware • External components and their functions • Internal components and their functions • Computer Diagnostics and Maintenance	Students will be able to: • Identify the hardware component of a computer • List the hardware components • Explain the features of the hardware component of computer • Describe the software running on the computer	• Group/ teamwork • Lecture • Presentation • Competencies • Demonstration project • Exploited by asking the student how the displayed scanning procedure	• Network server • Cluster • DMA • I/O • Interrupt vectors • Addressable bus paths • Assignable • ORQ	• The means to evaluate each student's IT technical and professional skills • Prior to receiving the IT specialist certificate • The hardware result review