



MINISTRY OF EDUCATION



ICT SYLLABUS FOR GENERAL EDUCATIONMPG, PCM, PCB, MEG, MCB, LFK, HLP & HGL

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REPUBLIC OF RWANDA



MINISTRY OF EDUCATION



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FOREWORD

The Rwanda Basic Education Board is honored to avail the ICT Syllabus for General Education combinations in Upper Secondary. This document serves as official guide to teaching and learning of ICT in those combinations.

The Rwandan education philosophy is to ensure that young people at every level of education achieve their full potential in terms of relevant knowledge, skills and appropriate attitudes that prepare them to be well integrated in society and exploit employment opportunities.

The ambition to develop a knowledge-based society and the growth of regional and global competition in the labour market has necessitated the shift to a competence-based curriculum in Rwandan schools. The introduction of ICT in upper secondary has the aim to prepare citizens who are competent and confident when carrying out tasks requiring the use of ICT tools. The rationale of the introduction of this syllabus is to ensure that secondary school leavers are equipped with the necessary skills allowing them to integrate in an ICT penetrated society, qualify for different job opportunities and further studies in Higher Education in different programs under education career advancement.

I wish to sincerely express my appreciation to the people who contributed towards the development of this document, particularly REB staff, teachers from general education and experts from local and international organizations for their technical support. A word of gratitude goes to the Head-teachers who availed their staff for various syllabus writing activities.

Dr. MBARUSHIMANA Nelson

Director General/REB.

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MURUNGI Joan

Head of Curriculum, Teaching & Learning Resources Department

1.1. GENERAL INTRODUCTION

1.1 Rwanda Education Sector Objectives

The Education Sector objectives are the reference point for the inclusion of education issues into other Rwandan policy documents. These objectives are aligned with those recommended in the Eastern African Curriculum Framework proposals. The Government of Rwanda through law number 36/2018 of 29th June, 2018 determining the organization of education revised the objectives of the sector. They are to:

- Provide Rwandans with adequate skills at all levels of general, professional, as well as technical and vocational education;
- Offer quality courses and education at all levels;
- Promote science, technology and research in order to equip many Rwandans with capacity to speed up national development;
- Promote the culture of peace, tolerance, justice, respect for human rights, solidarity, democracy and that of avoiding any form of discrimination or favoritism;
- Provide each Rwandan with an integrated education based on ethical values, science and social welfare and directed towards building a nation to ensure its sustainable development
- Instill into Rwandans the love of a job well done, the value of hard work, punctuality and promotion of competence
- Train the Rwandan to have freedom of thought, be innovative, have abilities to acquire and be analytical towards other people's opinions and to communicate his or her own ideas, to be patriotic and encourage him or her to be updated on the situation prevailing elsewhere;
- Eliminate all grounds and obstacles that hinder the development of girls and women education as well as of any other groups that need special attention.

These objectives and associated strategies are the backbone for developments in education including the curriculum and assessment policy and the curriculum framework.

1.2. Level Competences of a secondary education leaver in the Republic of Rwanda

As stated earlier, Pre-primary and Primary Teacher Education is under the responsibility of Rwanda Education Board. The following

are the competences of Teacher Education. By the time a student is exiting the college after three years he or she should:

- Be a qualified teacher who can compete not only locally but regionally and internationally;
- Have professional ethics and develop an inquiring mind for innovative education;
- Be prepared adequately for efficiency in education, administration, management, evaluation and measurement;
- Be competent, reliable, honest and responsible.
- Be equipped with potentials that enable him/her to explore the learners' abilities and interests
- Be able to develop the child's ability in critical thinking, free expression and ideas.

1.3. Background to curriculum review

The ICT syllabus is developed for upper secondary student in all options excluding MCE and MPC in Senior 4, 5 and 6.

The motive of developing the syllabus was to ensure that it is responsive to the needs of the student and what he/she will be required to accomplish in the society. Emphasis in this development was put more on skills and competences as well as the coherence within the existing content by drawing on the previous syllabus and benchmarking with syllabi elsewhere with best practices.

The ICT syllabus guides the interaction between the Teacher and students in the learning processes and highlights the competences a student should acquire during and at the end of each unit of learning. Student will have the opportunity to apply ICT in different contexts, and see its importance in daily life. Teachers help the students appreciate the relevance and benefits for studying ICT..

The learning of students is influenced by many factors such as curriculum relevancy, necessary and sufficient pedagogical approach by Teachers, assessment strategies and sufficient instructional materials. With the review of the ICT syllabus, these factors have been aligned with the competence-based curriculum for general education.

This implies equipping students with relevant knowledge, skills, attitude and values necessary to make them competitive on local, regional and global job market. This syllabus will allow future secondary leavers to acquire required skills in ICT and then it will enable them to go for further studies and researches.

1.4. Rationale of learning ICT

In Rwanda, ICT is penetrating every aspect of every day's life including service delivery and the country is going towards an intensive integration of ICT in education, which is a key player in the development of a country. ICT in education is to be used to enhance

teaching and learning and prepare citizens who will adapt in this newly created environment. Students in upper secondary have therefore a sound reason to study ICT advanced topics namely word processing, spreadsheet, internet, computer graphics, programming and database as they will develop in them inspiration and abilities to use ICT as a tool.

1.4.1. ICT and society

Information and Communication Technology (ICT) is a diverse set of tools and resources used to communicate, create, disseminate, store and manage information. In Rwanda, ICT has the purpose “to transform the Rwandan citizen into skilled human capital for the socio-economic development of the country by ensuring equitable access to quality education focusing on combating illiteracy, promotion of science and technology, critical thinking, and positive values and job creation. In Rwandan society, ICT is also the foundation for long term, sustainable and efficient government services, communication, economic development, financial transactions.

1.4.2. ICT and students

ICT as a subject empowers students with a package of skills and exposes them to common application software such as word processing, spreadsheets and presentations, database, internet and basic introduction to programming using visual basic, which will develop in them inspiration and abilities to use ICT as a tool. This will ultimately allow students to actively participate in a world of communication, research and innovation for social and economic transformation.

1.5. Professional standards and competences

1.5.1. Competences

Competence is defined as the ability to perform a particular task successfully, resulting from having gained an appropriate combination of knowledge, skills, attitudes and values. The present syllabus gives the opportunity to students to develop different broad ICT competences as well as the generic competences.

Broad subject competences are highlighted and broken into key competences for each level these are further broken into key unit competences which are finally split into learning objectives (knowledge, skills, attitudes and values) in every learning unit.

1.5.2 Broad ICT competences

During and at the end of the three years, the students should be able to:

- Apply acquired technological skills for smooth working in ICT integrated environment and develop materials to address the society needs
- Act as a role model in taking care of computers in the school environment or any other location and demonstrate ethical use of ICT tools
- Develop critical thinking and logical reasoning through computer web designing as to come up with possible solutions in order to address different issues related to service delivery in the country and the region
- Apply acquired technical knowledge, skills and attitudes in teaching and learning process and manage information efficiently, effectively and appropriately so as to create solutions to information problems using a range of application software
- Locate and access information and verify its integrity when investigating questions, topics or problems.

1.5.3. ICT and developing competences

The national policy documents based on national aspirations identify some ‘basic competences’ alongside the ‘generic competences’ that will develop higher order thinking skills and help student learn subject content and promote application of acquired knowledge, skills, attitudes and values.

Through observations, applying ICT skills, and presentation of information acquired during the learning process, the student will not only develop different ICT skills but also deductive and inductive skills, creativity and innovation skills, cooperation and communication, critical thinking and problem solving skills. This will be realized when students do practice in computer laboratories.

The acquired knowledge, attitude and values while learning ICT should develop a responsible citizen who adapts to scientific reasoning leading to technological change and develops confidence in reasoning independently. The students should show concern of individual attitudes, environmental protection and comply with the scientific method of reasoning. The scientific method should be applied with the necessary rigor, intellectual honesty to promote critical thinking while systematically pursuing the line of thought.

2. PEDAGOGICAL APPROACH

The change to a competence-based curriculum is about transforming learning, ensuring that learning is deep, enjoyable and habit forming.

2.1. Role of the student

In the competence-based syllabus, the student is the principal actor of his/her education. He/she is not an empty bottle to fill. Taking into account the initial capacities and abilities of the student, the syllabus suggests under each unit, some activities of the student and they all reflect active participation in the learning process.

The teaching/learning processes will be tailored towards creating a student friendly environment basing on the capabilities, needs, experience and interests.

The following are some of the roles or the expectations from the students:

- Students construct the knowledge either individually or in groups in an active way. Therefore, the opportunities should be given to them to use ICT tools.
- Students work on one competence at a time to form concrete units with specific learning objectives (knowledge, skills and attitude).
- Students will be encouraged to do research and present their findings through group work activities.
- Students are cooperative: they work in heterogeneous groups to increase interpersonal management.
- Students are responsible for their own participation and ensure the effectiveness of their work.

2.2. Role of the teacher

In the competence-based syllabus, the teacher is a facilitator, organizer, advisor, a conflict solver,

The specific duties of the teacher in a competence-based approach are the following:

Teacher is:

- **A facilitator**, his/her role is to provide opportunities for students to meet problems that interest and challenge them and that, with appropriate effort, they can solve. This requires an elaborated preparation to plan the activities, the place where they will be carried out, and the required assistance;
- **An organizer**, his/her role is to organize the students in the classroom, the computer laboratory and engage them using participatory and interactive methods through the learning processes as individuals, in pairs or in groups. To ensure that the learning

is personalized, active and participative, co-operative, the teacher must identify the needs of the students, the nature of the learning to be done, and the means to shape learning experiences accordingly;

- **An advisor:** he/she provides counseling and guidance for students in need. He/she comforts and encourages students by valuing their contributions in the class activities;
- **A conflict-solver:** most of the activities are performed in groups. The members of a group may have problems such as attribution of tasks; they should find useful and constructive the intervention of the teacher as a unifying element.
- **Ethical and preaches by example** by being impartial, a role-model, caring for individual needs, especially for slow students and those with physical impairments, through a special assistance by providing remedial activities or reinforcement activities.
- **Ensure the effective contribution of each member**, through clear explanation and argumentation to improve the English literacy, to develop a sense of responsibility, and to increase self-confidence and public speech ability.

2.3. Special needs education and inclusive education approach

All Rwandans have the right to access education regardless of their different needs. This implies that all citizens benefit from the same menu of educational programs. The possibility of this assumption is the focus of special needs education. The critical issue is that we have students who are totally different in their ways of living and learning as opposed to the majority. The difference can either be caused by emotional, physical, sensory and intellectual learning challenges.

These students equally have the right to benefit from education in colleges. Therefore, the school role is to enroll them, assess their Special Educational Needs (SEN) and set up suitable strategies and resources to appropriately provide for them. Assessment strategies and conditions should also be adapted to the educational needs of these students. Detailed guidance for each category of students with special education needs is provided for in the guidance for teachers.

2.4. Skills lab pedagogy

“Skills labs”, an abbreviation of skills laboratories, refers to specifically equipped practice rooms functioning as training or learning facilities offering students studying sciences opportunities to learn and have ample time to practice what they have learnt either in classroom or laboratory itself.

In order for the students to focus on development of transferable 21st century skills, students should have time to research, experiment and practice what has been taught in small groups or individually in order to enhance the acquisition of competences in each specific unit in the syllabus while carrying out tasks/activities. Through these activities students acquire knowledge, skills and values which they can demonstrate and apply.

ICT is a hands on subject where students are usually required to spend some time in the computer laboratory and perform activities depending on the exact field, unit/lesson they are in.

Each unit in the syllabus has assessment activities that provides opportunity to learners to integrate required resources in developing knowledge, skills, attitudes and values acquired during the unit, previous units within the subject and other subjects to make learning more practical and relevant. These assessment activities are suggested at the end of units to ensure practical application of the competencies acquired during learning and teachers are requested also to create other relevant activities taking into consideration the school environment.

During Skills lab activities, students are requested to be creative and innovative, apply theories, hypothesis, and laws and test them. Students should be able to construct, practice and present. Teachers should monitor students' performance and offer guidance in practical aspects. The work done by students is presented and constructive feedback provided in a course of time.

3. ASSESSMENT APPROACH

Assessment is the process of evaluating the teaching/learning processes through collecting and interpreting evidence of individual student's progress in learning and to make a judgment about a student's achievements measured against defined standards. Assessment is an integral part of the teaching/learning process. In the new competence-based curriculum, assessment must also be competence-based; whereby a student is given a complex situation related to his/her every day's life and asked to try to overcome the situation by applying what he/she learned.

3.1. Types of assessments

There are two major types of assessment namely formative and summative assessments. Any form of assessment should reflect the three domains of learning, which are Cognitive, Psychomotor and Affective

- **Knowledge and understanding:** Does the student demonstrate an understanding of the ICT concept? Has the student mastered the ICT concepts? Indicators: correctness of answers, coherence of ideas, logical reasoning,
- **Practical skills:** How does the student perform on aptitude and practical tests? Indicators: typing skills, ease in text manipulation, capability of software installation, speed and efficiency in using a computer and internet
- **Attitude and values:** How does the student respond to a task or a situation? What is the student's behavior vis-a-vis computer use? How ethically does he/she use it?

3.1.1. Formative assessment:

Formative assessment helps to check the efficiency of the process of learning. It is done within the teaching/learning process.

Continuous assessment involves formal and informal methods used by schools to check whether learning is taking place. When a teacher is planning his/her lesson, he/she should establish criteria for performance and behavior changes at the beginning of a lesson. Then, at the end of every unit, the teacher should ensure that all the students have mastered the specified key unit competences basing on the predefined criteria, before going to the next unit. The teacher will assess how well each student masters both the subject and the generic competences described in the syllabus as well as the professional practices. From this, the teacher will gain a picture of the all-round progress of the student. The teacher will use one or a combination of the following techniques: observation, pen and paper, and oral questioning and practice using computers

3.1.2. Summative assessments:

When assessment is used to record a judgment of a competence or performance of the student, it serves a summative purpose. Summative assessment gives a picture of a student's competence or progress at any specific moment. The main purpose of summative assessment is to evaluate whether competences have been achieved and to use the results for ranking or grading of students, for deciding on progression, for selection into the next level of education and for certification. This assessment should have an integrative aspect whereby a student must be able to show mastery of all competences. It can be internal school based assessment or external assessment in the form of national examinations.

3.2. Record keeping

This is gathering facts and evidence from assessment instruments and using them to judge the student's performance by assigning an indicator against the set criteria or standard. Whatever assessment procedures used generate data in the form of scores which will be carefully recorded and stored in a portfolio. The latter is used in deciding remedial actions, alternative instructional strategy and as well as feed back to the student. The records also are important to parents to check the learning progress and to advise accordingly.

This portfolio is a folder (or binder or even a digital collection) containing the student's work as well as the student's evaluation of the strengths and weaknesses of the work. Portfolios reflect not only work produced (such as papers and assignments),but also it is a record of the activities undertaken over time as part of student learning. Besides, it will serve as a verification tool for each student that he/she attended the whole learning before he/she undergoes the summative assessment for the subject.

3.3. Item writing in summative assessment

Before developing a question paper, a plan or specification of what is to be tested or examined must be elaborated to show the units or topics to be tested on, the number of questions in each level of revised Bloom's taxonomy and the marks allocation for each question. In a competence-based curriculum, questions from higher levels of Bloom's taxonomy should be given more weight than those from knowledge and comprehension level.

Before developing a question paper, the item writer must ensure that the test or examination questions are tailored towards competence based assessment by doing the following:

- Identify topic areas to be tested from the subject syllabus.
- Outline subject-matter content to be considered as the basis for the test.
- Identify learning outcomes to be measured by the test.
- Prepare a table of specifications.
- Ensure that the verbs used in the formulation of questions do not require memorization or recall answers only but also testing broad, subject and generic competences as stated in the syllabus.

4. RESOURCES

4.1. Materials needed for implementation

The successful implementation of this ICT syllabus will require learners to have computers which are the standard equipment for this subject. Alongside computers, other ICT tools and application software have been identified and it is indicated in this syllabus where they will be needed. Various resources for the implementation of the ICT competence based curriculum are the following:

- **Computer laboratory:** each learner works on a computer. Laptops are highly recommended where possible
- **Printer, Tablets and scanner:** needed when there are some documents to print or to scan
- **Projectors:** Presentation is a key element of the competence based curriculum where learners work. Teaching materials will be mostly displayed using a projector for ICT subject and other related subjects in order to assist teaching/learning
- **Teacher's laptop:** Teachers need to prepare learning and teaching materials and organize content so as to use the classroom time effectively.

- **Internet connectivity:** research in the competence based teaching/learning approach is necessary and this can be done using books but also computers with internet connectivity
- **Software:** in most cases skills expected from this competence based curriculum do not rely on any version of operating system or application software. However, the latest version of most software at the time of implementation will be used. Some of the needed software are:
 - **Operating system:** licensed copy of the most recent Windows Operating System
 - Word processing, spreadsheets and presentation software:
 - **Graphics and multimedia:** digital camera, Photoshop, Microsoft Picture Manager, and Movie Maker.
 - Browsers: Chrome, Mozilla Firefox, internet explorer, and Opera, Microsoft edge.

Where the teacher is not familiar with the needed software and tools, it is recommended that he/she learns before using them in order to save time while teaching. Also, the listed software doesn't replace the role of the teacher.

4.2. Human resource

The effective implementation of this curriculum needs a joint collaboration of educators at all levels. Given the material requirements, teachers are expected to accomplish their noble role as stated above. The staff in charge of education at District and sector level should ensure overall support to general education schools for a successful implementation. On the other hand, head teachers and deputy head teachers in charge of studies are required to make a close follow-up and assess the teaching/learning of this subject due to their profiles in the schools. These combined efforts will ensure bright future careers and lives for students as well as the contemporary development of the country.

In a special way, the teacher of ICT at general education level should have a firm understanding of ICT concepts and pedagogical content of teaching ICT at secondary levels. He/she should be qualified in ICT related options and have a firm ethical conduct. The teacher should possess the qualities of a good facilitator, organizer, problem solver, listener and adviser. He/she is required to have basic skills and competence of guidance and counseling because students may come to him or her for advice.

The teacher of ICT should have the following skills, values and qualities:

- Inspire students and the community to get devoted to learning and using ICT
- Engage students in a variety of learning activities
- Use multiple teaching and assessment methods

- Adjust instruction to the level of the students
- Have creativity and innovation in the teaching/learning process
- Be a good communicator and organizer
- Be a guide/ facilitator and a counselor
- Make useful link of ICT with other Subjects and real life situations
- Have a good mastery of the ICT Content as well as pedagogical content of teaching ICT
- Have good classroom management skills

5. SYLLABUS UNITS

5.1. ICT SYLLABUS FOR Senior Four

5.1.1. Key competences at the end of Senior Four

- Assemble and disassemble a computer, Fix identified hardware issues and install software in a computer
- Apply advanced skills to create suitable Word documents
- Arrange data in a meaningful way by using Excel advanced functionalities
- Use the internet ethically in doing researches
- Use different google application tools in solving real life problems

Subject: ICT		Senior : 4		Combination: General Education combinations (except MCE and MPC)	
TOPIC AREA: COMPUTER MAINTENANCE			Sub Topic: Computer components and troubleshooting		
Unit 1: Computer Maintenance				No. of periods: 18	
Key Unit competence:					
<ul style="list-style-type: none"> ▪ Assemble and disassemble a computer ▪ Fix identified hardware issues and install software in a computer 					
Learning Objectives			Content		Learning Activities
Knowledge and understanding	Skills	Attitudes and values			
<ul style="list-style-type: none"> • Describe elements of the computer system unit and their roles • Discuss computer maintenance principles • Recognize and explain computer hardware issues • Identify software installation principles • Identify software issues • Explain different steps for Windows OS installation • Explain different steps to install an application software 	<ul style="list-style-type: none"> • Evaluate the capacity of processor, RAM and hard disk • Apply computer maintenance principles to ensure it is in good working condition • Apply diagnostic principles to identify computer hardware issues • Format and install an Operating System • Install different computer applications 	<ul style="list-style-type: none"> • Appreciate the role and function of elements of the computer system unit • Show awareness of the behaviors to have before and during computer maintenance • Develop a behavior to scan every external memory connected to a computer before using it • Acquire a behavior to install software 	HARDWARE: Elements of the computer system unit and their roles: Power supply, Video card, Hard disk, Mother board, CPU, RAM <ul style="list-style-type: none"> • Computer maintenance principles • Computer capacity <ul style="list-style-type: none"> ○ Storage size (bit, byte,) ○ Processing speed • Identifying and addressing hardware issues • Assembling a computer • Disassembling a computer SOFTWARE: Software installation principles <ul style="list-style-type: none"> • Computer software issues: <ul style="list-style-type: none"> ○ OS issues ○ Applications issues ○ Viruses 		<ul style="list-style-type: none"> • Work in groups to discuss about elements of the computer system unit and their role. Present findings to the class • In groups and with the guidance of the teacher, student open computer system unit, disconnect each element from its place and reconnect it. • In groups and guided by the teacher, students identify different hardware issues and fix them • Students work in groups to brainstorm about software issues and present findings to the class • Guided by the teacher, in groups student format a computer, install OS and other applications such Ms. office, anti-virus, etc.

		for which one knows the origin	Computer software installation <ul style="list-style-type: none"> ○ Installation of an OS ○ Installation of an Application software 	<ul style="list-style-type: none"> ● At the end of the formatting lesson, student identify steps to install OS and the importance of each
Assessment criteria: Learners can successfully assemble and disassemble a computer and install software				
Links to other Subjects: English: gain new vocabulary in English; Mathematics: by doing measurements of the computer capacity				
Materials: Computers, Projector, Tools box for computer maintenance, screen projector				

Subject: ICT		Senior: 4		Combination: General Education combinations (except MCE and MPC)	
TOPIC AREA: APPLICATION SOFTWARE			Sub Topic: Word Processing		
Unit 2: Advanced Word Processing				No. of periods: 18	
Key Unit competence: Apply advanced skills to create suitable Word documents					
Learning outcomes			Content	Learning Activities	
Knowledge and understanding	Skills	Attitudes and values			
<ul style="list-style-type: none"> ● Describe different ways of formatting a text ● State and apply the steps of creating and updating a table of content, referencing, 	<ul style="list-style-type: none"> ● Apply different methods to format a text of a Word document ● Create and insert foot- notes and endnotes ● Create and update a table of content ● Make page set up by putting margin, page orientation and column 	<ul style="list-style-type: none"> ● Show interest in creating good looking Word document ● Show concern to care for document 	<ul style="list-style-type: none"> ● Formatting a document <ul style="list-style-type: none"> ○ Change the font ● Paragraph group (Indent, spacing, bullets, numbering, alignment) Referencing a word document: ● Header and footer ● Creating and inserting footnotes and endnotes ● Converting footnotes to endnotes ● Creating and updating a table of contents Page layout tab command ● Page set up group <ul style="list-style-type: none"> ○ Margin 	<ul style="list-style-type: none"> ● Practical exercises on a given text, format it (bold, italic, underline, color, format painter, font case) and align a para- graph. ● Individually and guided by the teacher, student insert header, footer, page numbers and footnotes in a document. ● Facilitated by teacher, students create a table of content and update it when they 	

and protecting a document	<ul style="list-style-type: none"> Practice the way of protecting documents from unauthorized changes and authorize reviewer to insert comment and tracked changes only 	s so as to protect them from unauthorized access	<ul style="list-style-type: none"> Orientation Column <p>Protecting a document from unauthorized changes</p> <ul style="list-style-type: none"> Setting a password to open and modify a document Restricting formatting and editing of a document Allowing editing in a protected document Authorizing reviewers to insert comments and tracked changes only Authorize reviewers to insert comments only Removing document protection 	<p>make any change.</p> <ul style="list-style-type: none"> Students practice different exercises on page setup and paragraph such as setting the margin, page orientation and column Student practice how to protect a document by putting and removing protective password.
Assessment criteria: Student can apply formatting of text, insert table of content and protect a document.				
Links to other Subjects: English: presentation of extended writing, punctuation and spelling.				
Materials: Computers, projector, soft documents, text books, and the internet				

Subject: ICT		Senior: 4		Combination: General Education combinations (except MCE and MPC)	
TOPIC AREA: Application Software			Sub Topic : Spreadsheet		
Unit 3: Advanced Spreadsheet I				No. of periods: 15	
Key Unit competence: Arrange data in a meaningful way by using Excel advanced functionalities					
Learning objectives			Content	Learning Activities	
Knowledge and understanding	Skills	Attitudes and values			
<ul style="list-style-type: none"> Explain the use of different advanced excel formula and functions. Explain the importance of using chart in Excel sheets 	<ul style="list-style-type: none"> Apply conditional formatting to cells Use filters Create and format charts, labels and axes 	<ul style="list-style-type: none"> Show an interest in formatting excel data by using advanced spread sheet format options. Appreciate the role 	<ul style="list-style-type: none"> Conditional formatting (highlight cell rule, top/bot- tom rule, ...) Charts Data organization (sorting, filter) 	<ul style="list-style-type: none"> Individually students enter data in Excel that they will later use in formatting, and creating charts. Individually and with the guidance of the teacher, students format data using conditional formatting, and practice sorting and filtering 	

<ul style="list-style-type: none"> ● Interpret a chart ● Use Advanced Spreadsheet functions and formula. ● Export data to other applications 	<p>played by advanced spreadsheet options in manipulating excel data in daily life.</p>	<ul style="list-style-type: none"> ● Freezing panes ● Workbook view <p>Integrating with other applications</p> <ul style="list-style-type: none"> ● Exporting data to another file type (pdf, xps, ...) 	<ul style="list-style-type: none"> ● From the file they have already created, students create charts, label them, format axes and interpret them ● Students export data to other applications
Assessment criteria: Student can accurately manipulate worksheet data using conditional formatting.			
Links to other Subjects: Mathematics (Logic and Statistics.)			
Resources : Computers, Projector and Excel applications			

Subject: ICT		Senior: 4		Combination: General Education combinations (except MCE and MPC)	
TOPIC AREA: INTERNET			Sub Topic: INTERNET USE		
Unit 4: Searching on the internet					No. of periods: 21
Key Unit competence: Use the internet ethically in doing researches					
Learning Objectives			Content		Learning Activities
Knowledge and under- standing	Skills	Attitudes and values			
<ul style="list-style-type: none"> ● Identify and explain components of URL ● Explain the internet search strategies for better search results 	<ul style="list-style-type: none"> ● Use the internet efficiently and effectively to search for information ● Apply internet search techniques so as to get better search results ● Apply acquired 	<ul style="list-style-type: none"> ● Using internet appropriately by respecting all the related ethic principles ● Demonstrate an awareness of copy right issues while 	<ul style="list-style-type: none"> ● Internet ethics ● Web security (spyware, hacking, firewall) ● URL and its parts (protocol, host name, domain name, sub domain) ● Search on the internet <ul style="list-style-type: none"> ○ Strategies for better search results: <ul style="list-style-type: none"> *Simple search techniques (keyword searching) *Advanced search techniques 		<ul style="list-style-type: none"> ● In groups and after doing a research learner will discuss internet ethics and web security strategies ● Learners will give examples of URL and with the teacher, identify its different parts ● The teacher will give to groups of student research topics that they will do using the internet. After the

	knowledge to request for a service online	searching for resources from the internet <ul style="list-style-type: none"> • Show a sense of respect while using online platforms 	(Boolean operators, quotation marks, tilde sign...) <ul style="list-style-type: none"> *Searching for documents, books, images, video on the internet o Searching by image o Browser's Techniques for remembering (Cookies, Bookmark, Cache and Browser history) 	research the whole class will discuss about the research question they used, the number of search results and any other aspect they realized. <ul style="list-style-type: none"> • In class and using a projector the learners guided by the teacher, do a search using advanced search techniques
Assessment criteria: Students can use the internet in doing researches				
Links to other Subjects: Entrepreneurship (e commerce, online services), Religious studies (for ethical use of internet)				
Materials: Computers with internet connectivity and internet browsers, Projector, books				

Subject: ICT		Senior: 4		Combination: General Education combinations (except MCE and MPC)	
TOPIC AREA: INTERNET			Sub Topic: Internet use		
Unit 5: Online google applications tools					No. of periods: 27
Key Unit competence: Use different google application tools in solving real life problems					
Learning Objectives			Content		Learning Activities
Knowledge and understanding	Skills	Attitudes and values			
<ul style="list-style-type: none"> • Describe elements of online google apps working environment • Explain advantage of using online google application • Compare online 	<ul style="list-style-type: none"> • Differentiate among various google sheet application tools and their usage • Upload and download data from google drive 	<ul style="list-style-type: none"> • Appreciate the use of google application tools with the role that they bring in nowadays technology 	<ul style="list-style-type: none"> • Google docs: Introduction, role of google docs tool in teaching and learning, starting google doc, Google doc working environment • Google sheet: Introduction, role of google sheet tool in teaching and learning, starting google sheet, Google sheet working Environment 		<ul style="list-style-type: none"> • The teacher presents different online google apps to the students and ask students to describe them. • Students Work in individually using computer with internet to discuss about elements of the online google application tools

google application with offline software	<ul style="list-style-type: none"> Describe different online google applications and associate each app with each software application 		<ul style="list-style-type: none"> Google slides: Introduction, role of google slides tool in teaching and learning, starting google slides, Google slides working Environment, share the contents created using google slide Google form: Introduction, google form creation, working environment of google form, content sharing using google form Google drive: Introduction, Upload and download contents to or from drive Google classroom: Google classroom creation, add students, Add collaborators, assignments, or quiz in Google classroom 	<p>and present findings to the class</p> <ul style="list-style-type: none"> Teacher will show learners how to access data on google drive Teacher will create classroom and invite students to join and students will create classroom and ask their classmate to join too Students create channel and share it to the classmate ,
Links to other Subjects: E-commerce, Search on internet				
Assessment criteria: Students can use online google application				
Materials: Computer with internet connection , Projector, digital material,				

5.2 ICT STLLABUS FOR Senior Five

5.2.1 Key competences at the end of Senior Five

- Use the full potential of the spreadsheet to manipulate data
- Create a power point presentation to address a bigger audience
- Use graphic tools in capturing and editing images
- Use e-commerce websites and social media platforms to request for online services and access social media
- Explain the different concepts used in database management

Subject: ICT		Senior : 5		Combination: General Education combinations (except MCE and MPC)	
TOPIC AREA: Application Software			Sub Topic : Spreadsheet		
Unit 1 : Advanced Spreadsheet II					No. of periods: 36
Key Unit competence: Use the full potential of the spreadsheet to manipulate data.					
Learning objectives			Content		Learning Activities
Knowledge and understanding	Skills	Attitudes and values			
<ul style="list-style-type: none"> • Explain the use of logical, math, statistical and text functions. • Recognize the importance of logical, math, statistical and text functions • Describe the role played by advanced spread sheets functions in daily life 	<ul style="list-style-type: none"> • Protect and secure a spreadsheet or cells within a spreadsheet • Use logical, math, statistical and text functions • Apply spreadsheet security features • Use functions such as those associated with logical, statistical, financial and mathematical operations. 	<ul style="list-style-type: none"> • Appreciate the use of logical, math, statistical and text functions. • Show the interest in protected and unprotected worksheets. Conceptualize the advanced spreadsheet functions contribution in real life especially in using excel templates. 	<p>Advanced spreadsheet functions:</p> <ul style="list-style-type: none"> • Logical (AND, IF, FALSE, NOT, OR) • Math (ABS, ARABIC& ROMAN, BASE, MOD, SQRT) • Statistical (AVERAGE, AVERAGE- IF, LARGE, MAXIFS, MEDIAN, MINIF, -MODE) • Text (CHAR, CONCATENATE, LOWER, UPPER,) • Using formula & functions from different sheets <p>Protecting worksheet style, contents and elements</p> <ul style="list-style-type: none"> • Protecting & unprotecting worksheet, lock &unlock cells, style, contents and elements from unauthorized user access • Data validation • Using other excel templates 		<ul style="list-style-type: none"> • Individually, using sample data provided by the teacher, students use advanced functions to manipulate the content in cells, protect and unprotect a worksheet • Students enter validated data in Excel • Individually, student s use different spreadsheet templates.
Assessment criteria: Student can produce sophisticated reports, to perform complex mathematical and statistical calculations, and to improve productivity using a spreadsheet application.					

Links to other Subjects: Mathematics: Functions, Equations, Logic, Probability and Statistics. **Entrepreneurship:** Financial modeling.

Resources: Computers, Projector and Excel applications.

Subject: ICT		Senior : 5		Combination: General Education combinations (except MCE and MPC)	
TOPIC AREA : Application Software			Sub Topic: Presentation		
Unit 2 : Advanced power point presentation				No. of periods: 18	
Key Unit competence: Create a power point presentation to address a bigger audience					
Learning objectives			Content	Learning Activities	
Knowledge and understanding	Skills	Attitudes and values			
<ul style="list-style-type: none"> • Explain the process of copying, dividing slides into sections • Discuss the procedure of applying theme, and changing background to slides. • Explain procedures to add sound, video and animating slides 	<ul style="list-style-type: none"> • Create a presentation • Divide presentations into sections • Apply a background change to all slides • Add sound and animation to slides • Insert header& footer and comments to a PowerPoint presentation 	<p>Appreciate the way of presenting accurately information to a particular audience using presentations</p>	<ul style="list-style-type: none"> • Create and manage presentations • Copy slides and content, inserting slides from the outline • Managing slides (Hide, move, rearrange, delete, divide slides into sections) • Apply design themes and format background • Adding notes and comments • Insert header and footer • Add sound and animation to slides • Animate text and pictures in slides • Customize animation effects • Add audio and video content to slides • Add and manage slide transitions (add sound and timing) • Presenting using power point: 	<ul style="list-style-type: none"> • On their computers, student practice given exercises related to copy, Divide presentations into sections, Rearrange slides and sections, Apply themes and change slide backgrounds • Student do practice related to animating text and pictures on slides, customizing animation effects, adding audio and video content to slides and adding & managing slide transitions. There after student print created presentations • Student present their created PowerPoint presentation to their peers using a projector 	

			<ul style="list-style-type: none"> • Presenting using a projector • Print and distributing Handouts 	
Assessment criteria: Student can create, manage a presentation, and add video, chart, and animation to a slide so as to make it attractive to the audience.				
Links to other Subjects: English: presentation of extended writing, punctuation and spelling., arts and craft				
Materials: Computers, projector, soft documents, text books, and the internet				

Subject: ICT		Senior: 5		Combination: General Education combinations (except MCE and MPC)	
TOPIC AREA: COMPUTER GRAPHICS			Sub Topic: GRAPHIC DESIGN		
Unit 3: Computer Graphics tools					No. of periods: 18
Key Unit competence: Use graphic tools in capturing and editing images					
Learning objectives			Content	Learning Activities	
Knowledge and understanding	Skills	Attitudes and values			
<ul style="list-style-type: none"> • Explain different concepts related to computer graphics • Initiate the types of images format • Identify and describe the parts of an image capturing tool 	<ul style="list-style-type: none"> • Capture images using a digital camera and scanner, and save them to a computer • Manipulate properly 	<ul style="list-style-type: none"> • Manifest a liking of image manipulation and decoration using Paint and Snipping tool and show a sense of dignity and integrity in 	<ul style="list-style-type: none"> • Introduction to computer Graphics (Concepts: pixel, morphing, 2D&3D image, raster scan, random scan) • Image format (TIFF, JPEG, GIF, PNG, ...) • Image capturing tools <ul style="list-style-type: none"> ◦ Digital camera <ul style="list-style-type: none"> *Parts of a digital camera *Using a digital camera (taking 	<ul style="list-style-type: none"> • Students do research in the library or using the internet in order to find meanings to some computer graphics concepts and image format • Through groups and after doing a research, the teacher provides a camera /scanner and students identify the parts of each. Thereafter these devices are used to capture/scan 	

<p>such as a camera or a scanner</p> <ul style="list-style-type: none"> • Know and understand how to use Photoshop program working environment 	<p>images using paint and snipping tool</p> <ul style="list-style-type: none"> • Selecting, and editing an image using Photoshop tools 	<p>manipulating them.</p> <ul style="list-style-type: none"> • Appreciate the use of Photoshop to improve image presentation 	<p>pictures and sending them to a computer)</p> <ul style="list-style-type: none"> ○ Scanner <ul style="list-style-type: none"> *Parts of a scanner *Using a scanner • Screenshots capturing ○ Using the print screen key (PrtSc) ○ Using the snipping tool • Graphics software - Paint ○ Starting and saving a paint file ○ Select, Cut, Copy, Paste, Crop ○ Paint tools (pencil, Fill color, Text, Eraser, Color picker, Magnifier) ○ Insertion of shapes • Understanding what Photoshop does · selecting and moving images, viewing and arranging layers. editing image and file saving • Photoshop image Editing Basic color painting Image color correction • Basic Photoshop Text Tools (Text Tool, font, size, Alignment, warped text) 	<p>images that they will transfer to a computer.</p> <ul style="list-style-type: none"> • Students take screenshots of their computers using the PrSc key or the snipping tool, save them in different format. • Students copy images captured using cameras or scanners, PrSC key and snipping tool and manipulate them in Paint. • Teacher help learners to edit a picture in different format by using Photoshop
<p>Assessment criteria: Student can use graphic tools such as digital camera, scanner and snipping tool and can manipulate images properly.</p>				
<p>Links to other Subjects: Physics (Optics- parts of a digital camera), Fine arts and craft</p>				
<p>Materials: Computers, digital camera and scanner, projector, Photoshop program</p>				

Subject: ICT	Senior : 5	Combination: General Education combinations (except MCE and MPC)
TOPIC AREA: INTERNET	Sub Topic: INTERNET USE	
Unit 4: E commerce, social media and online service		No. of periods: 21
Key Unit competence: Use e-commerce websites and social media platforms to request for online services and access social media.		
Learning objectives	Content	Learning activities

Knowledge and under- standing	Skills	Attitudes and values		
<ul style="list-style-type: none"> • Discuss the advantages of using e commerce and online services compared to traditional ways of commerce and service • Discuss the importance of social media in daily life 	<ul style="list-style-type: none"> • Apply acquired knowledge to request for a service online • Create accounts on social media 	<ul style="list-style-type: none"> • Show a sense of respect while using online platforms 	<ul style="list-style-type: none"> • E commerce <ul style="list-style-type: none"> ○ Understanding e commerce (history, advantages vs. disadvantages) ○ E commerce models (Business to Customer, Business to Business, ...) ○ Payment methods • Social media (Facebook, twitter, Instagram, WhatsApp) • Online Services <ul style="list-style-type: none"> ○ E Banking ○ E payment (credit card, Mobile Money,) ○ Local online services (irembo) 	<ul style="list-style-type: none"> • Guided by the teacher learners visit and explore one e commerce site, social media site and an online service provider web application (irembo). After this, each topic is discussed as shown in the content. • On the guidance of the teacher, students create social media accounts
<p>Assessment criteria: Students can use the internet in doing researches and visiting online service provider websites</p>				
<p>Links to other Subjects: Entrepreneurship (e commerce, online services), Religious studies (for ethical use of internet)</p>				
<p>Materials: Computers with internet connectivity and internet browsers, Projector, books</p>				

Subject: ICT		Senior :5	Combination: General Education combinations (except MCE and MPC)	
TOPIC AREA: DATABASE		Sub Topic:		
Unit 5: Database basics			No. of periods: 15	
Key Unit competence: Explain the different concepts used in database management				
Learning Objectives			Content	Learning Activities
Knowledge and understanding	Skills	Attitudes and values		
<ul style="list-style-type: none"> Describe database concepts, data independence, database models 	<ul style="list-style-type: none"> Differentiate between logical independence and physical independence Differentiate types of database users 	<ul style="list-style-type: none"> Appreciate the role of database and its management 	<ul style="list-style-type: none"> Introduction to database (database, Data, Information) Database concepts Area where database can be applied Database approaches KEY TERMS (Entity, Attributes, Relational Database, Cardinality, Table, Primary Key, Foreign key constraint, Alternate Key) Database users (Database administrator, database designer and end user) Data independence logical data and physical data independence 	<ul style="list-style-type: none"> With guidance of the teacher learners discuss in pair the area where database can be used Learners discuss in group about differences between logical independence and physical independence
Assessment criteria: Student can explain about database concepts together with database approaches and the area where database can be applied .				
Links to other Subjects: <i>English: gain new vocabulary in English.</i>				
Materials: <i>Computers, Books, Internet</i>				

5.3 ICT SYLLABUS FOR Senior Six

5.3.1 Key competences at the end of Senior Six

- Identify important entities and their attributes from a given real life situation and create a related database
- Apply Structured Query Language in managing a relational database and create a simple database project
- Describe a Visual Basic Integrated Development Environment (VB-IDE) and connect a simple form to a database
- Build a standard static website using HTML

Subject: ICT		Senior: 6		Combination: General Education combinations (except MCE and MPC)	
TOPIC AREA: DATABASE			SUB-TOPIC AREA: RELATIONAL DATABASE DESIGN		
Unit 1: Database design					No. of periods: 18
Key Unit Competence: Identify important entities and their attributes from a given real life situation and create a related database					
Learning outcomes			Content	Learning Activities	
Knowledge and understanding	Skills	Attitudes and values			
<ul style="list-style-type: none"> ● Describe table, record, candidate key, primary key, alternate key, composite key, foreign key, Relationship in 	<ul style="list-style-type: none"> ● Identify important Entities and their Attributes from a given real life situation ● Draw an Entity and their associated 	<ul style="list-style-type: none"> ● Identity appropriate database for a given situation ● Enumerate database design steps starting 	<ul style="list-style-type: none"> ● Database models: Hierarchical, Network, Object Oriented, Relational ● Database relational model ● Database design steps <ul style="list-style-type: none"> ○ Investigation / Analysis of Situation ○ Identification of Important Entities and their Attributes ○ Identification of relationship among entities 	<ul style="list-style-type: none"> ● Teacher will present data recorded manually to students and ask them to computerize them ● Students will do Individual exercises on Entity Relationship Diagram 	

tables	Attributes	from Investigation up to Data base management	<ul style="list-style-type: none"> ○ Representation of Entity Relationship (E-R) Diagram with symbols ● Database optimization through Normalization, Definition, Normal form (1NF,2NF,3NF, 4NF) ● Data types in Access ● Database creation ● Manipulation of data in Access tables 	<ul style="list-style-type: none"> ● Student work on creating tables by defining structure, setting simple or composite primary key,
<ul style="list-style-type: none"> ● Describe meaning and steps of Normalization and various Normal form (1NF, 2NF,3NF, 4NF) 	<ul style="list-style-type: none"> ● Draw an Entity Relationship Diagram ● Create a database with several table 	<ul style="list-style-type: none"> ● Appreciate use of design view to create table 		
Assessment criteria: Students can create a normalized database and suggest a suitable database solution for a real life situation				
Links to other subjects: Mathematics(Arithmetic)				
Materials: Computers,, Projector, Ms Access , digital material, internet				

Subject: ICT		Senior : 6		Combination: General Education combinations (except MCE and MPC)	
TOPIC AREA: DATABASE			SUB-TOPIC AREA: Database manipulation		
Unit 2: SQL and Database project					No. of periods: 18
Key Unit Competency: Apply Structured Query Language in managing a relational database and create a simple database project					
Learning outcomes			Content	Learning Activities	
Knowledge and understanding	Skills	Attitudes and values			
<ul style="list-style-type: none"> ● Differentiate among various queries used on data definition, data manipulation and data control languages 	<ul style="list-style-type: none"> ● Create a database using data definition language using CREATE DATABASE Query ● Create a new table using CREATE TABLE query ● Delete an existing table using DROP TABLE query ● Modify an existing table using 	<ul style="list-style-type: none"> ● Appreciate the use of SQL queries to define, manipulate and control 	<ul style="list-style-type: none"> ● Introduction to SQL ● Data Definition Language (DDL): CREATE DATABASE, USE DATABASE, CREATE TABLE DROP TABLE, ALTER 	<ul style="list-style-type: none"> ● Teacher will suggest tables of a real life database and ask students to implement it using one of RDBMS ● Using tables of database created above, teacher gives many questions and ask students to write down 	

<ul style="list-style-type: none"> Describe the meaning of database constraints Describe steps to develop a database project 	<p>ALTER TABLE query</p> <ul style="list-style-type: none"> Insert new record into the database using INSERT query Delete existing record from the database using DELETE query Updated the existing record from the database using UPDATE query Display records from the database using SELECT query Identify Database requirement for a real life situation, plan and develop a short database project for this situation 	<p>database</p> <ul style="list-style-type: none"> Appreciate the use of database constraint to manipulate data in real life 	<p>TABLE</p> <ul style="list-style-type: none"> Data manipulation language(DML): INSERT, SELECT, (aggregate functions, String expressions) DELETE, UPDATE Date Control language(DCL) GRANT, REVOKE <p>SQL Constraints</p>	<p>corresponding SQL commands and implement them using the computer</p> <ul style="list-style-type: none"> Teacher will provide a mismatched contents table to students so that they arrange them accordingly Practical exercises on the use of Structure Query language Practice exercise require to emphasize the use of SQL constraint
<p>Assessment criteria: Students can apply Structured Query Language in RDMBS and create a short database project</p>				
<p>Links to other subjects: Mathematics (Arithmetic, Boolean Algebra, relational calculus)</p>				
<p>Materials: Computers , projector , digital material, internet, RDBMS software</p>				

Subject: ICT		Senior: 6		Combination: General Education combinations (except MCE and MPC)	
TOPIC AREA: PROGRAMMING			SUB-TOPIC AREA: Visual Basic		
Unit 3: Introduction to Visual Basic				No. of periods: 36	
Key Unit Competency: Describe a Visual Basic Integrated Development Environment (VB-IDE) and connect a simple form to a database					
Learning outcomes			Content	Learning Activities	
Knowledge and understanding	Skills	Attitudes and values			
<ul style="list-style-type: none"> Describe Visual Basic and its 	<ul style="list-style-type: none"> Work in Visual Basic 	<ul style="list-style-type: none"> Appreciate the contribution of 	<ul style="list-style-type: none"> Introduction: Definition of Event Oriented Programming 	<ul style="list-style-type: none"> Using a printed out screenshot of the main interface of Visual Basic 	

<p>Integrated development environment(IDE) features</p> <ul style="list-style-type: none"> • List components of Visual basic IDE such as Form, Menu, property window, Form layout, Tool Box, code window.... • List all Steps of connecting visual basic form to a database 	<p>environment (open, write codes, Compile, close)</p> <ul style="list-style-type: none"> • Drag and drop control from a tool box on a form (Form designing) • Design a form in Visual Basic by using controls of Tool box such as Label, Radio Button, Check box, Combo Box, List Box control, etc.. 	<p>visual basic programming to design user friendly interface by the use of software with Graphical User Interface(GUI) over Command User Interface(CUI)</p>	<ul style="list-style-type: none"> • Understanding Visual Basic: Features of visual basic • Starting Visual Basic: steps to open visual basic application • Visual Basic Integrated Development Environment (VB-IDE), • Elements of VB IDE: Menus bar, Tool bar, Form design, Property window, Project Explorer, Form Layout Window, Code window or VB Editor, Tool box • Design a form using different Visual Basic Controls • Connecting visual basic form to Database: Use ADO Control to connect database field to different VB Object • Building an ergonomic visual basic interface • Steps of connecting visual basic form to a database • Execution of visual basic project 	<p>environment allow learners to identify each component of the Visual Basic interface</p> <ul style="list-style-type: none"> • Teacher will set a practical work of designing a form using various controls such as labels, textbox and command buttons etc. • Teacher will provide problems to student and ask students to provide solutions using VB language by creating a user friendly interface using some components of visual basic IDE. • Teacher provides practical questions(problems) by which students design a form and connect it to created database • Teacher will show to learners ergonomic rules for designing user interface
<p>Assessment criteria: Students can Describe a Visual Basic Integrated Development Environment (VB-IDE), design graphical user interface with several controls on forms and connect the forms to created database</p>				
<p>Links to other subjects: Database(table creation)</p>				
<p>Materials: Computers , Projector, Internet connection, Visual Basic IDE, digital material</p>				

Subject: ICT		Senior: 6	Combination: General Education combinations (except MCE and MPC)	
TOPIC AREA: INTERNET		Sub Topic : Web designing		
Unit 4: Introduction to web designing			No. of periods: 36	
Key Unit competence: Build a standard static website using HTML				
Learning outcomes			Content	Learning Activities
Knowledge and understanding	Skills	Attitudes and values		
<ul style="list-style-type: none"> • Explain the difference between website, web page, web application • Explain the use and importance of Dynamic web page and static web page 	<ul style="list-style-type: none"> • Differentiate dynamic web page from static web page • Use HTML tags to create a static web page 	<ul style="list-style-type: none"> • Appreciate the use of different tags used to create a web page • Have an awareness of not visiting the web sites that can harm and influence them negatively 	<ul style="list-style-type: none"> • Introduction to web designing • Key terms: Website, Web page, Web application, Static web page, Dynamic web page • Introduction to HTML • Importance of using both static web page and dynamic web page • Design a static web page using html tags and hyperlinks <ul style="list-style-type: none"> ○Tags that identify and name documents ○Tags that organize web page contents • Creation of links • Website creation project: information gathering, planning, design, development, testing and delivery, maintenance 	<ul style="list-style-type: none"> • In groups students discuss the difference between website, webpage, web application and list the most popular web sites they know which cannot harm and influence them negatively. • Students create hyper- links • Students describe and use HTML tags to design a web page • Individually student create a website using HTML codes • In groups students create website projects and present them
Assessment criteria: Learners can create a static web site and differentiate it from a dynamic web site				
Links to other Subjects: internet				
Materials: Computers, projector, text books, Notepad				

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7. ANNEXES

1. SUBJECTS AND WEEKLY TIME ALLOCATION FOR SINGLE SHIFT IN UPPER SECONDARY-GENERAL EDUCATION (S4-S6)

Literature in English– French- Kinyarwanda - Kiswahili (LFK)

Subject

I. Core subjects/Compulsory: Examinable in National exams	Number of periods (Period= 40 minutes)		
	S4	S5	S6
1. Literature in English	7	7	7
2. French	7	7	7
3. Kinyarwanda	7	7	7
4. Kiswahili	6	6	6
5. Entrepreneurship	3	3	3
6. General Studies and Communication Skills	3	3	3
Sub-total 1	33	33	33
II. Core Subjects: Examinable at School level			
7. ICT	3	3	3
8. English	3	3	3
9. Subsidiary Mathematics	3	3	3
10. Physical Education and Sports	2	2	2
Sub-total 2	11	11	11
III. Co-curricular activities (compulsory)	6	6	6
Total number of contact periods per week	50	50	50
Total number of contact hours/week	33.3	33.3	33.3

Total number of contact hours per year (39 weeks)	1300	1300	1300
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A. History–Literature in English - Psychology (HLP)

Subjects	Number of periods (Period= 40 minutes)		
	S4	S5	S6
I. Core subjects/Compulsory: Examinable in National exams			
1. History	7	7	7
2. Literature in English	7	7	7
3. Psychology	7	7	7
4. General Studies and Communication Skills	3	3	3
5. Entrepreneurship	3	3	3
Sub-total 1	27	27	27
II. Core Subjects examinable at School level			
6. Kinyarwanda	3	3	3
7. ICT	3	3	3
8. English	2	2	2
9. Physical Education and Sports	2	2	2
10. Subsidiary Mathematics	3	3	3
11. French	3	3	3

Sub-total 2	16	16	16
III. Co-curricular activities (compulsory)	7	7	7
Total number of contact periods per week	50	50	50
Total number of contact hours/week	33.3	33.3	33.3
Total number of contact hours per year (39 weeks)	1300	1300	1300

B. History – Geography – Literature in English (HGL)

Subject	Number of periods (Period= 40 minutes)		
	S4	S5	S6
I. Core subjects/Compulsory: Examinable in National exams			
1. History	7	7	7
2. Geography	7	7	7
3. Literature in English	7	7	7
4. General Studies and Communication Skills	3	3	3
5. Entrepreneurship	3	3	3

6. English	3	3	3
Sub-total 1	30	30	30
II. Core Subjects examinable at School level			
7. Kinyarwanda	3	3	3
8. ICT	3	3	3
9. Subsidiary Mathematics	3	3	3
10. Physical Education and Sports	2	2	2
11. French	3	3	3
Sub-total 2	14	14	14
III. Co-curricular activities (compulsory)			
Total number of contact periods per week	50	50	50
Total number of contact hours/week	33.3	33.3	33.3
Total number of contact hours per year (39 weeks)	1300	1300	1300

C. Physics - Chemistry - Mathematics (PCM)

Subject	Number of periods (Period= 40 minutes)		
	S4	S5	S6
I. Core subjects/Compulsory: Examinable in National exams			
1. Physics	7	7	7

2. Chemistry	7	7	7
3. Mathematics	7	7	7
4. General Studies and Communication Skills	3	3	3
5. English	3	3	3
6. Entrepreneurship	3	3	3
Sub-total 1	30	30	30
II. Core Subjects examinable at School level			
7. Kinyarwanda	3	3	3
8. ICT	3	3	3
9. Physical Education and Sports	2	2	2
10. French	3	3	3
Sub-total 2	11	11	11
III. Co-curricular activities (compulsory)	9	9	9
Total number of contact periods per week	50	50	50
Total number of contact hours/week	33.3	33.3	33.3
Total number of contact hours per year (39 weeks)	1300	1300	1300

Physics – Chemistry - Biology (PCB)

Subject	
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I. Core subjects/Compulsory: Examinable in National exams	Number of periods (Period= 40 minutes)		
	S4	S5	S6
1. Physics	7	7	7
2. Chemistry	7	7	7
3. Biology	7	7	7
4. General Studies and Communication Skills	3	3	3
5. English	3	3	3
6. Subsidiary Mathematics	4	4	4
7. Entrepreneurship	3	3	3
Sub-total 1	34	34	34
II. Core Subjects examinable at School level			
8. Kinyarwanda	3	3	3
9. ICT	3	3	3
10. Physical Education and Sports	2	2	2
11. French	3	3	3
Sub-total 2	11	11	11
III. Co-curricular activities (compulsory)	5	5	5
Total number of contact periods per week	50	50	50

Total number of contact hours/week	33.3	33.3	33.3
Total number of contact hours per year (39 weeks)	1300	1300	1300

D. Mathematics - Physics - Geography (MPG)

Subject	Number of periods (Period= 40 minutes)		
	S4	S5	S6
I. Core subjects/Compulsory: Examinable in National exams			
1. Mathematics	7	7	7
2. Physics	7	7	7
3. Geography	7	7	7
4. General Studies and Communication Skills	3	3	3
5. English	3	3	3
6. Entrepreneurship	3	3	3
Sub-Total 1	30	30	30
II. Core Subjects examinable at School level			
7. Kinyarwanda	3	3	3
8. ICT	3	3	3
9. Physical Education and Sports	2	2	2
10. French	3	3	3

Sub-Total 2	11	11	11
III. Co-curricular activities (compulsory)	9	9	9
Total number of contact periods per week	50	50	50
Total number of contact hours/week	33.3	33.3	33.3
Total number of contact hours per year (39 weeks)	1300	1300	1300

E. Mathematics – Economics – Geography (MEG)

Subject	Number of periods (Period= 40 minutes)		
I. Core subjects/Compulsory: Examinable in National exams	S4	S5	S6
1. Mathematics	7	7	7
2. Economics	7	7	7
3. Geography	7	7	7
4. General Studies and Communication Skills	3	3	3
5. English	3	3	3
6. Entrepreneurship	3	3	3
Sub-Total 1	30	30	30
II. Core Subjects examinable at School level			
7. Kinyarwanda	3	3	3

8. ICT	3	3	3
9. Physical Education and Sports	2	2	2
10. French	3	3	3
Sub-Total 2	11	11	11
III. Co-curricular activities (compulsory)	9	9	9
Total number of contact periods per week	50	50	50
Total number of contact hours/week	33.3	33.3	33.3
Total number of contact hours per year (39 weeks)	1300	1300	1300

F. Mathematics - Computer Science - Economics (MCE)

Subject	Number of periods (Period= 40 minutes)		
	S4	S5	S6
I. Core subjects/Compulsory: Examinable in National exams			
1. Mathematics	7	7	7
2. Computer Science	7	7	7
3. Economics	7	7	7
4. General Studies and Communication Skills	3	3	3

5. English	3	3	3
6. Entrepreneurship	3	3	3
Sub-Total 1	30	30	30
II. Core Subject examinable at School level			
7. Kinyarwanda	3	3	3
8. Physical Education and Sports	2	2	2
9. French	3	3	3
Sub-Total 2	8	8	8
III. Co-curricular activities (compulsory)	12	12	12
Total number of contact periods per week	50	50	50
Total number of contact hours/week	33.3	33.3	33.3
Total number of contact hours per year (39 weeks)	1300	1300	1300

G. Mathematics – Physics – Computer Science (MPC)

Subject	Number of periods (Period= 40 minutes)		
	S4	S5	S6
I. Core subjects/Compulsory: Examinable in National exams			
1. Mathematics	7	7	7
2. Physics	7	7	7

3. Computer Science	7	7	7
4. General Studies and Communication Skills	3	3	3
5. English	3	3	3
6. Entrepreneurship	3	3	3
Sub-total 1	30	30	30
II. Core Subject examinable at School level			
7. Kinyarwanda	3	3	3
8. Physical Education and Sports	2	2	2
9. French	3	3	3
Sub-total 2	8	8	8
III. Co-curricular activities (compulsory)	12	12	12
Total number of contact periods per week	50	50	50
Total number of contact hours/week	33.3	33.3	33.3
Total number of contact hours per year (39 weeks)	1300	1300	1300

H. Mathematics Chemistry Biology (MCB)

Subject	Number of periods (Period= 40 minutes)		
	S4	S5	S6
I. Core subjects/Compulsory: Examinable in National exams			
1. Mathematics	7	7	7

2. Chemistry	7	7	7
3. Biology	7	7	7
4. General Studies and Communication Skills	3	3	3
5. English	3	3	3
6 Entrepreneurship	3	3	3
Sub-Total 1	30	30	30
II. Core Subject examinable at School level			
7. ICT	3	3	3
8. Kinyarwanda	3	3	3
9. Physical Education and Sports	2	2	2
10. French	3	3	3
Sub-Total 2	11	11	11
III. Co-curricular activities (compulsory)	9	9	9
Total number of contact periods per week	50	50	50
Total number of contact hours/week	33.3	33.3	33.3
Total number of contact hours per year (39 weeks)	1300	1300	1300

7.2 Overview of ICT syllabus

TOPIC AREA	SUBTOPIC AREA	KEY COMPETENCES		
		SENIOR 4	SENIOR 5	SENIOR 6

COMPUTER MAINTENANCE	COMPUTER MAINTENANCE	Assemble and disassemble a computer, Fix identified hardware issues and install software in a computer		
APPLICATION SOFTWARE	ADVANCED WORD PROCESSING	Apply advanced skills to create suitable Word documents		
	ADVANCED SPREADSHEET	Arrange data in a meaningful way by using Excel advanced functionalities		
				Use the full potential of the spreadsheet to manipulate data
	PRESENTATION		Create a power point presentation to address a bigger audience	
INTERNET	INTERNET USE	Use the internet ethically in doing researches		
		Use different google application tools in solving real life problems		
			Use e-commerce websites and social media platforms to request for online services and access social media	
	WEB DESIGN			Build a standard static website using HTML

COMPUTER GRAPHICS	GRAPHIC DESIGN		Use graphic tools in capturing and editing images	
DATABASE			Explain the different concepts used in database management	
	RELATIONAL DATABASE DESIGN			Identify important entities and their attributes from a given real life situation and create a related database
	DATABASE MANIPULATION			Apply Structured Query Language in managing a relational database and create a simple database project
PROGRAMMING	VISUAL BASIC			Describe a Visual Basic Integrated Development Environment (VB-IDE) and connect a simple form to a database