Information and Communication Technology (ICT)

1. Introduction

The ICT program is designed to create a balance between the imparting of skills, the acquisition of techniques and knowledge, the growth and awareness of the students' personal responses. It challenges all students by providing opportunities for different needs and learning styles. Also, it encourages students to explore the role of technology in both historical and contemporary contexts. And lastly, it contributes to raising students' awareness of their responsibilities as world citizens when making decisions and taking actions on technology issues.

1.1 Teaching and Learning Approaches and Strategies

A variety of learning and teaching approaches are interwoven and deployed to suit and challenge all students by proving opportunities for different needs interests, abilities, prior knowledge and learning styles. Students are assessed against defined assessment criteria and not against other students

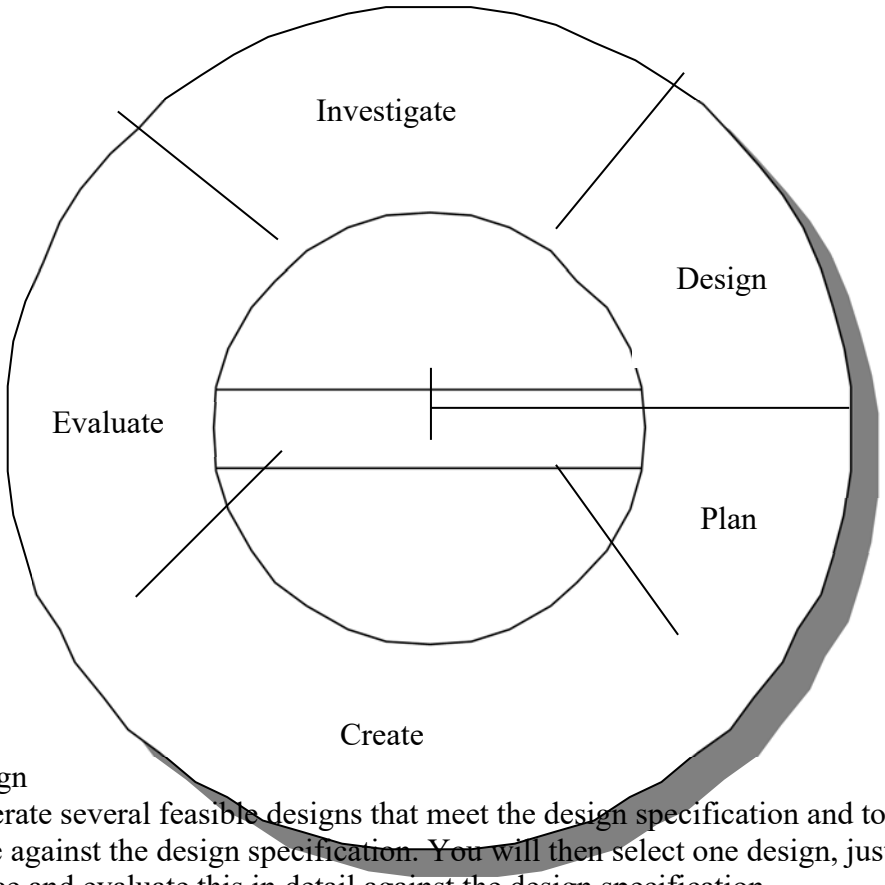
Pedagogical approaches including

Inquiry & Investigation
Direct instruction
Scaffolding
Co-construction
e-Learning and flipped classroom

1.2 The Design Cycle

Students will be assessed according to level descriptors designed for the stages of the design cycle for each project. Some of the stages of the Design Cycle will be assessed for projects in S1. All of the stages will be assessed for projects in S1 to S3.

Investigate
Show that you have researched and analyzed the problem to be solved, the IT skills required, and have used appropriate sources. This should be written in an organized manner.



Design
Generate several feasible designs that meet the design specification and to evaluate these against the design specification. You will then select one design, justify your choice and evaluate this in detail against the design specification.

Plan
Construct a clear and thorough plan on how to create your chosen product/solution that has a series of logical steps, and that makes effective use of resources and time. Indicate how you will organize your time and resources. Evaluate the plan and justify any modifications to the design.

Create
Follow your plan using appropriate tools to create your original product/solution. Create a Journal showing all the steps of how you created your product/solution, including all the mistakes and corrections you made along the way and why you made any amendments.

Evaluate
Evaluate the effectiveness, quality, and efficiency of your final product/solution. Include improvements that could be made.

Attitudes in Technology
It is expected that students will motivate themselves to enthusiastically and independently create products/solutions that are interesting and engaging. Students are expected to adhere to deadlines and make themselves aware of all assessment criteria.

2. The aims of ICT

The aims of Information and Communication Technology are to:

- encourage an awareness of the impact of technology
- develop an appreciation of the international, intercultural aspects of technology
- provide a variety of technological information and ideas
- encourage curiosity, ingenuity, resourcefulness and discrimination
- stimulate self-confidence through the knowledge and application of technology
- develop practical skills through the creation of products/solutions
- promote effective, informed, appropriate communication
- foster responsibility for designs, decisions, actions and assessment
- promote effective co-operation and respect for individual differences when responding to technological challenges
- develop logical-thinking skills.
- To understand and apply AI for problem-solving and innovation.

3. Framework of Junior Secondary ICT Curriculum

S1

Branches	Topics
Computer Systems	- Introduction to modern computer systems. - Understanding bit, Byte and units of information.
IT Skills, Applications and Social Issues	- Google classroom, Google drive and its web services. - Touch typing. - Basic image editing techniques and applications. - Spreadsheets: functions, formulas, data handling and representation. - Readings on social issues related to technology.
Programming	- Procedural programming in App inventor 2. -STEM with A.I.

S2

Branches	Topics
Computer Systems	- Computer systems: organization, hardware and software. - Peripheral and storage devices.
IT Skills, Applications and Social Issues	- Spreadsheets: functions, formulas, data handling and representation. - Basic 3D modeling and printing. - Basic database knowledge and SQL - Readings on social issues related to technology.
Computer language	- HTML5 and CSS3.

S3

Programming	- Procedural programming concepts: functions, variables and branching and loops. - Understanding A.I. and designing sample chatbot apps. - Advanced Web technologies: HTML, CSS and interactive web pages with online database
IT Skills, Applications and Social Issues	- Design thinking knowledge - UX/UI and app design - Advanced word processing skills

S1 – S2 CASTLE

STEAM Sparks: Crafting Ideas into Reality	STEAM Education and First Experience in Maker Culture, with Digital Fabrication Tools. We will introduce various digital fabrication machines and software so that students will have the basic knowledge and skills to design and create customised items for special occasions, whether they are friends' birthdays or the School's anniversary celebration.
Minecraft Metaverse Game Design and Competition Trainin	Everyone knows Minecraft — building, crafting, and combining skills are second nature to most players. But have you ever considered using programming to make building your Minecraft world simpler and more efficient? No more grinding away day and night! With the coding features and automated robots in Minecraft Education, you can streamline complex, repetitive building tasks, freeing up your creativity for the fun stuff. Join us in the Minecraft Education world, code your way to efficiency, and even take your creations to competitions. We can't wait to see your imagination in action!
RoboGenius Academy: Elite Engineering & Coding	Through multi-form robot assembly, control, and programming training, you'll explore a variety of sensors and mechanical functions building, or even custom-modifying, create your very own design of UGot multifunctional robot. With your unique upgrades, you can aim for both local and international competitions, using programming skills to command your robot with precision on the battlefield. Let's join our forces and go for glory at the RoboGenius WRC World Robot Competition!

S3 Module

Drone Control	Through learning drone control principles and basic training, combined with programming and swarm flight simulator design, you'll master how to put on a spectacular drone show. You could even take part in upcoming city-wide drone competitions — and maybe make it all the way to the national stage. Come join us and be part of the action!
LED Coding	Design your own LED matrix animation and bring a touch of technology and magic to an ordinary lesson! Use creative LED arrangements to express your ideas and transform the classroom into a dazzling experience. Let's brainstorm together and unleash your creative universe!

4. Delivery Schedule

	S1	**S2**	**S3**
1st term	➢ Google drive and its web services. ➢ Procedural programming in App Inventor 2 ➢ Introduction to modern computer systems ➢ Understanding bit, Byte and units of information ➢ Touch typing.	➢ Basic 3D modeling and printing. ➢ Computer systems: organization, hardware, and software ➢ Peripheral and storage devices	➢ Procedural programming concepts with Python ➢ Advanced word processing skill ➢ Design thinking and UX/UI
2nd term	➢ Spreadsheets: Functions and formulas ➢ Basic image editing techniques and applications ➢ Computer literacy ➢ STEM with A.I. ➢ Readings on social issues related to technology.	➢ More advanced spreadsheets: Functions, formulas, data handling and representation ➢ HTML and CSS ➢ Database and SQL ➢ Readings on social issues related to technology.	➢ Web technologies: HTML, CSS and interactive web pages ➢ Python and A.I. application. ➢ Readings on social issues related to technology.

5. Summative and Formation Assessment

5.1 Summative assessment

Summative assessment is the judgment made by the teacher of the standard of achievement reached by each student at the end of the year, which is carefully designed to measure the level of achievement expected for the relevant year.

5.2 Formative Assessment

The following shows how various aspects of students' work could be assessed formatively.

- Preparation for class
- Participation in class
- Identifying and considering strategies
- Using and acknowledging a variety of sources for research effectively
- Communicating ideas and information
- Managing time
- Working as a member of a group/Collaborative skills
- Working independently and confidently with self-motivation and a positive attitude
- Examining the efficacy of his/her own planning process
- Punctuality in meeting deadlines
- Taking responsibility for personal learning

5.3 Assessment for Learning

S1 – S3
Worksheet exercises, online pre-lessons, quiz and practical assignments – 50%
Individual/group projects – 50%

5.4 Assessment criteria

Criteria:-	Grades
A. Knowledge of Topic	30-50%
B. IT Skills and Applications	30-50%
C. Programming skill	30-50%
Overall	100%

5.5 Grade descriptors and boundaries

Grade	Boundaries
1	0-39
2	40-59
3	60-69
4	70-79
5	80-89
5*	90-94
5**	95 - 100

6. The role of parents at home and home learning

In ICT, students are assessed through continuous assessment. Both effort in project-based learning and the demonstration of organization during lesson time will predominantly count for the assessment. Class time will be given for designated tasks to be completed, where interactions within groups and amongst students will take place and will be duly assessed.

As a consequence, there should not be a need for ICT projects to be completed at home. Students are encouraged to manage their time effectively and will work to ‘deadlines’ where projects must be completed by certain dates. When needed, time will be made available at lunchtimes or after school for students who wish to keep working on their projects in school. For students with an interest in developing their computer skills at home and at school, they will be strongly encouraged to do so.

Guiding Your Child with Artificial Intelligence (AI)
As AI becomes a more common tool, we encourage you to help your child explore its potential while understanding its limits. Your role is to foster a healthy curiosity about AI while reinforcing the importance of integrity and independent thought.

Encourage Exploration, Not Misuse: AI can be a fantastic partner for brainstorming ideas, simplifying complex topics, or sparking creativity. Encourage your child to use it as a learning assistant. However, it is crucial to emphasize that AI tools should assist, not replace, their own thinking and effort. Submitting AI-generated work as their own is a form of academic dishonesty. The goal is to learn with AI, not to have AI do the work for them.

Prevent Overuse and Promote Balance: Like any technology, balance is key. It's important that your child does not become over-reliant on AI for tasks they should be learning to do themselves. Please help them continue to develop fundamental skills in research, writing, and critical thinking. Open conversations about how they are using these tools can help ensure they are using them responsibly and effectively.

Students are required to read technology-related materials from time to time. Parents can help if students find difficulty in some technical terms or special names. Presentations will be requested for sharing their understanding.

Written assignments are usually started in class and are completed as home learning. Deadlines for each assignment are extremely important, and it is essential that each student make every effort to hand in work on time.

Parents having problems with regard to home learning should consult the ICT teachers.