Law Ting Pong Secondary School (2020-21)
S1-3 ICT Course Outline & Assessment Guide

Introduction

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Aims

1. To nurture and engage confident learners in the subject and application of ICT.
2. To inspire students in developing ICT products of a high standard.
3. To apply technology (and appropriate tools) in creatively developing, communicating, implementing and evaluating solutions.
4. To understand the underlying concepts and principles of technology artefacts, systems and environments.
5. To further increase learning opportunities of ICT through STEM, Project-Based Learning and cross-curricular opportunities.
6. To be aware of the social responsibilities and rights of others through activities with and through technology.
7. To extend student learning opportunities and horizons through a range of experiences beyond campus.
8. To provide students with a preparation path and taster for future DSE ICT studies.

Approaches to Learning

The ICT course provides many different opportunities by which students can learn, all of which involved varied forms of technology. A variety of face-to-face (student-teacher) blended activities in classrooms, online discussions, group collaborations, email, learning platforms, multimedia (photos, videos, audio) and online quizzes are encouraged and expected. The flexibility and range of such modes will allow to cater for student diversity and individual needs, as well as students' ability to take control of their own learning and apply it to many situations. Lesson content is provided electronically through an online platform, wyhich also helps extend learning of ICT beyond campus.

Assessment Methods

The ICT curriculum has an ideal blend of theory and practical (hands-on) units. The methods by which students are assessed for ICT are suitably dependent upon the tasks and objectives of a particular learning unit. Such methods are varied, with examples e.g. worksheets, workbooks, quizzes, online apps, end-products (digital or physical), illustrations, presentations and reflections. Furthermore, S3 students have a 'taster' opportunity to sample and experience DSE-level assessment through multiple-choice, long-answer and short-answer paper quizzes, in addition to a special Creative Programming Project involving S4-type concepts. As there are no examinations for S1-3 ICT the course is 100% Continuous Assessment.

Through formative assessment, ICT teachers will be on-hand to provide guidance and feedback to students in helping them improve and reinforce learning, which helps prepare students for summative assessment in the form of grades. Summative assessment components for ICT typically involve quizzes, worksheets, practical projects and end-of-unit reflections. Students are also able to showcase their learning and understanding through the application of ICT into other school subjects, including STEM.

To assist students further with formative and summative assessment our ICT teachers provide lunchtime intervention and drop-in sessions (through respective ICT classrooms) for interested and concerned students.

Assessment Objectives and Weightings

The ICT curriculum is primarily focused on 4 key objectives - Planning & Problem-Solving [AO1], Knowledge [AO2], Skills [AO3] and Reflection [AO4], each of which constitute a 25% weighting for the final Continuous Assessment mark at the end of the course.

ASSESSMENT OBJECTIVE	 HIGH (17-25)	 MEDIUM (8-16)	 LOW (0-7)
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[AO2] Knowledge 25%	• Students are able to find most or all information to help solve a problem or facilitate task/activity. • Information and components are put together to show many meaningful connections in work and finished products. • Evidence of work shows a very strong and detailed understanding of ICT theory and conventions.	• Students can find some of the information needed for their problem or task/activity. • Some information and components are put together to show meaningful connections. • Evidence of work shows a good understanding of ICT theory.	• Insufficient or not enough information found from students for the task/activity. • Information and components have weak or little-to-no connections between them. • Evidence of work shows a weak understanding of ICT theory, or no evidence of work.
[AO3] Skills 25%	• Students use all appropriate digital platforms and tools in creating end-products. • The end-products are appropriate to the task, and communicate the right message to the intended audience with great detail.	• Students use a number of digital platforms and tools in creating end-products. • End-products communicate the right message to the intended audience.	• Students use very little digital platforms and tools in creating products. • End-products are inappropriate and do not communicate the right message to the intended audience.
[AO4] Reflection 25%	• Reflections are very detailed and show student understanding and ownership of a problem/task they need to solve, including how to improve.	• Reflections are detailed and show a basic understanding of a problem/task they need to solve.	• Reflections are limited, unclear, or have not been attempted.

Units & Assessment Items (S1 ICT)

NAME OF UNIT	FOCUS LEARNING AREA	DURATION	FORMATIVE ASSESSMENT ITEMS	SUMMATIVE ASSESSMENT ITEMS	RESOURCES
Computer Concepts	• Basic Ideas of Computers (Input-Process-Output) • Hardware and Software	3 Weeks	**CS01 Textbook Unit 1-2 Q&A** **Teacher-Student Class Discussion** Engage and elicit student response **Group Discussion & Poster-Making** Concepts w/teacher & peer feedback **Research & Show-And-Tell** Take photos, post and showcase understanding	❖ **CS01 Workbook Unit 1-2 Q&A** [AO1,AO2] ❖ **Online Quiz** [AO2] ❖ **Reflection** [AO4]	*CS01 Textbook (UNIT 1-2)* *CS01 Workbook (UNIT 1-2)* *Tutorial Slides* *Padlet* *Kahoot* *G-Suite (Google Drive)* *Online Resources* *Video Tutorials* *Mobile Device w/camera*
Basics of Data and Program Storage	• Introduction to Data • Importance of Data Storage • Introduction to Program Storage • Importance of Program Storage				
Introduction to Scratch	• Overview of Scratch app and how it can be used for programming. • Get familiar with the user interface of the Scratch editor. • Work with sprites, backdrops and blocks.	4 Weeks	**PA01s Textbook Unit 1-4 Q&A** **Teacher-Student Class Discussion** Engage and elicit student response **Diagramming** Students draw pictures or draft program steps in showing understanding of a unit chapter. Teacher feedback provided **Student-Created Scratch Programs** (via. scratch.mit.edu) on individual student profiles as per textbook unit chapters. Teacher feedback provided **Exit Quiz** (via. Google Form or paper) to reinforce student knowledge and understanding of unit concepts	❖ **PA01s Worksheet Q&A** [AO2] ❖ **Student-created Scratch Program** [AO3] ❖ **Online Quiz** [AO2] ❖ **Videos** [AO3] ❖ **Reflection** [AO4]	*PA01s Textbook (UNIT 1-4)* *Tutorial Slides* *Online Resources* *Video Tutorials* *Kahoot* *G-Suite (Google Drive)* *Scratch.mit.edu*
Loops and Conditional Statements	• Use of FOREVER loop blocks. • Use of IF-THEN conditional statement blocks.				
Variables and Keyboard Control	• Controlling of sprite motion with a keyboard. • Use of variables to store information.				
Random Numbers and Mouse Control	• Controlling of sprite motion with a mouse. • Use of random number blocks.				
Digital Safety & Citizenship	• Understand the importance of digital online presence and HOW/WHY we should conduct ourselves appropriately • The concepts of online safety and practices in knowing what to do in order to keep safe online	2 Weeks	**Teacher-Student Class Discussion** Engage and elicit student response **Group Discussion & Poster-Making** Concepts w/teacher & peer feedback **Research & Show-And-Tell** Take photos, extract online information, post and showcase understanding	❖ **Worksheet Q&A** [AO1, AO2] ❖ **Online Quiz** [AO2] ❖ **Reflection** [AO4] ❖ **Student-Created Video Product** [AO3]	*Tutorial Slides* *Videos* *Websites* *Search Engines* *G-Suite (Google Drive)* *Britannica Schools*
Research Skills	• The ability to find important information, both online and offline, from a variety of sources and methods				

Grade Boundaries and Descriptors

GRADE	PERFORMANCE CRITERIA	BOUNDARIES (%)
A*	Demonstrates exceptional skills in ICT. Uses the most appropriate tools from what was available, to create high quality products. Technology is used in an innovative way to create higher quality products than what assignments anticipated. Solved all technology related problems associated within assignments and tasks.	85+
A	Demonstrates strong skills in ICT. Uses quality tools from what was available that was appropriate to create quality products, with technology being used in appropriate ways, and with many features applied. Solved most technology related problems associated with assignments and tasks.	75-84
B	Demonstrates capable skills in ICT. Uses adequate tools from what was available and appropriate to create desired products. Technology is used in appropriate ways, and basic capabilities are showcased. Tools are set up corrected and used appropriately with minor assistance. Ability to solve some technology related problems associated with assignments and tasks.	65-74
C	Demonstrates reasonable skills in ICT. Uses appropriate tools from what is available to create desired products, but only with outside assistance. Technology is used but assistance is needed for basic capabilities of technology to create products. Tools are used and set up appropriately, but only with outside assistance. Ability to solve most basic obstacles associated with assignments and tasks.	50-64
D	Has limited skills in ICT. Uses lesser effective tools from what is available to create desired products. Technology is used to address tasks but few capabilities of technology are used to create products. Tools are used and set up appropriately, but only with major outside assistance. Ability to solve only elementary technological obstacles.	35-49
E	Has weak skills in ICT. Technology tools that are used are inappropriate for assignments or tasks, or student is incapable of operating tools. Technology is used but not to benefit the creation of a quality product. Tools were tried but the product could not be produced. Inability to resolve most technological obstacles relating to assignments and tasks.	34 or below

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Units & Assessment Items (S2 ICT)

NAME OF UNIT	FOCUS LEARNING AREA	DURATION	FORMATIVE ASSESSMENT ITEMS	SUMMATIVE ASSESSMENT ITEMS	RESOURCES
Computers & IPO	• What is a computer? • Revision on Input VS Output • The understanding of HOW computers operate according to the IPO (Input, Process, Output) Cycle. • Use of an IPO Chart to break-down a system into multiple components and understand their separate functionality. • Knowledge and application of electronic input/output Arduino components including boards, LCD modules, passive buzzers, relays and sensors.	5 Weeks	**Teacher-Student Class Discussion** Engage and elicit student response, with feedback **Arduino Programs & Devices** Students practice Arduino skills using Tinkercad Circuits, physical components/controllers and mBlock **Exit Quiz** (via. Google Form or paper) to reinforce student knowledge and understanding of unit concepts	❖ **Student-made IPO Chart** [AO2,AO3] ❖ **Arduino Program & Practical I/O Product** [AO1,AO3] ❖ **Video of Product** [AO3] ❖ **Reflection** [AO4]	*Tutorial Slides* *Padlet* *Kahoot* *G-Suite (Google Drive)* *Online Videos* *mBlock* *Tinkercad Circuits*
Arithmetic Operations	• Use of operators and how numbers and mathematical calculations are utilised in programming. • Use of operator blocks to add, subtract, multiply, divide and join numbers. • Use of operator blocks to compare more than one number.	2 Weeks	**PA01s Textbook Unit 1-4 Q&A** **Teacher-Student Class Discussion** Engage and elicit student response **Student-Created Scratch Programs** (via. scratch.mit.edu) on individual student profiles as per textbook unit chapters. Teacher feedback provided **Exit Quiz** (via. Google Form or paper) to reinforce student knowledge and understanding of unit concepts	❖ **Student-made Programs & Algorithms** [AO3] ❖ **Online Quiz** [AO2] ❖ **Reflection** [AO4]	*PA01s Textbook (UNIT 6-7)* *Online Resources* *Video Tutorials* *Kahoot* *G-Suite (Google Drive)* *Scratch.mit.edu*
Algorithms	• The use of flowcharts, pseudocode and real-world examples for identifying and breaking-down problems to solve. • Understanding flowcharts and how they relate to planning and programming elements.				
Copyright, Plagiarism, Credit & Citations	• The definitions of copyright, plagiarism and intellectual property, and WHY they are important. • HOW to identify and respect rules on copyright, plagiarism and intellectual property, as well as how each aspect per. topic inter-relate with one another. • The importance of respecting and giving credit for one's work through proper citations and referencing.	2 Weeks	**Teacher-Student Class Discussion** Engage and elicit student response **Group Discussion & Poster-Making** Concepts w/teacher & peer feedback **Research & Show-And-Tell** Extract online information, post and showcase understanding	❖ **Student-made video project** [AO1,AO3] ❖ **Worksheet** [AO2] ❖ **Online Quiz** [AO2] ❖ **Reflection** [AO4]	*Tutorial Slides* *Online Videos* *Websites* *G-Suite (Google Drive)*
Reliability & Accuracy of Information	• How to identify information as reliable and accurate. • Understand best practices for evaluating websites and online sources.				

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Units & Assessment Items (S3 ICT)

NAME OF UNIT	FOCUS LEARNING AREA	DURATION	FORMATIVE ASSESSMENT ITEMS	SUMMATIVE ASSESSMENT ITEMS	RESOURCES
Data / Lists	• Use of lists and other means to store information. • Basics of lists. • Lists in calculations. • Lists in interation. • Manipulation of lists.	3 Weeks	**PA02s Textbook Unit 1-3 Q&A** **Teacher-Student Class Discussion** Engage and elicit student response **Student-Created Scratch Programs** (via. scratch.mit.edu) on individual student profiles as per textbook unit chapters. Teacher feedback provided **Mock Quiz** Students will try a mock quiz paper in a format similar to DSE ICT (MC/short-answer/long-answer questions) on programming concepts to prepare them for a summative paper quiz. Feedback provided **Exit Quiz** (via. Google Form or paper) to reinforce student knowledge and understanding of unit concepts	- **MC/Short-Answer/Long-Answer Quiz** [AO2] - **Student-made Scratch 3.0 Programs** [AO3] - **Reflection** [AO4]	*PA02s Textbook (UNIT 1-3)* *Online Resources* *Video Tutorials* *Kahoot* *G-Suite (Google Drive)* *Scratch.mit.edu*
Functions	• The use and benefit of structuring programs into separate functions. • Use of custom blocks to define functions. • Use of custom blocks for programming of movement. • Use of clones (Scratch 3.0).				
Simulated Motion	• How technology can be used in simulating real-world physics. • Use of variables and numbers to simulate motion e.g. acceleration, collision and rebound.				
Creative Project: IoT (Internet of Things)	• The planning and implementing of a functional, creative IoT project through research, programming, building, and the application of appropriate ICT / STEM themes. • Knowledge of IoT and examples of real-world application. • Use of NodeMCU ESP8266 microcontroller (or equivalent). • Knowledge of electronic Arduino & ESP components including boards, shields, motors, input/output devices and sensors. • Use of mobile apps for controlling IoT systems. • Creativity and skills in building a productive IoT system (e.g. Smart Home, automated temperature regulator).	6 Weeks	**Teacher-Student Class Discussion** Engage and elicit student response, with feedback **Arduino/NodeMCU Programs & Devices** Students practice Arduino/NodeMCU/Blynk skills through building, programming and connecting physical components with Arduino IDE and WiFi connectivity **Exit Quiz** (via. Google Form or paper) to reinforce student knowledge and understanding of unit concepts	- **Online Quiz** [AO2] - **Student-made mBlock / Arduino IDE Program** [AO3] - **IoT Worksheet** [AO2] - **Student-made (IoT) product** [AO1, AO3] - **Video of student-made product** [AO3] - **Reflection** [AO4]	*Arduino IDE* *Blynk* *Online Tutorials* *Online Resources* *G-Suite (Google Drive)*

Grade Boundaries and Descriptors

GRADE	PERFORMANCE CRITERIA	BOUNDARIES (%)
A*	Demonstrates exceptional skills in ICT. Uses the most appropriate tools from what was available, to create high quality products. Technology is used in an innovative way to create higher quality products than what assignments anticipated. Solved all technology related problems associated within assignments and tasks.	85+
A	Demonstrates strong skills in ICT. Uses quality tools from what was available that was appropriate to create quality products, with technology being used in appropriate ways, and with many features applied. Solved most technology related problems associated with assignments and tasks.	75-84
B	Demonstrates capable skills in ICT. Uses adequate tools from what was available and appropriate to create desired products. Technology is used in appropriate ways, and basic capabilities are showcased. Tools are set up corrected and used appropriately with minor assistance. Ability to solve some technology related problems associated with assignments and tasks.	65-74
C	Demonstrates reasonable skills in ICT. Uses appropriate tools from what is available to create desired products, but only with outside assistance. Technology is used but assistance is needed for basic capabilities of technology to create products. Tools are used and set up appropriately, but only with outside assistance. Ability to solve most basic obstacles associated with assignments and tasks.	50-64
D	Has limited skills in ICT. Uses lesser effective tools from what is available to create desired products. Technology is used to address tasks but few capabilities of technology are used to create products. Tools are used and set up appropriately, but only with major outside assistance. Ability to solve only elementary technological obstacles.	35-49
E	Has weak skills in ICT. Technology tools that are used are inappropriate for assignments or tasks, or student is incapable of operating tools. Technology is used but not to benefit the creation of a quality product. Tools were tried but the product could not be produced. Inability to resolve most technological obstacles relating to assignments and tasks.	34 or below