



COURSE OUTLINE
COMPUTER SCIENCE – GENERAL YEAR 11: 2021
UNIT 1 AND UNIT 2



This course will run the two units, 1 and 2, concurrently. The student Semester 1 grade will therefore be an estimate.

Term and Weeks	Topic and key teaching points	Syllabus content	Assessment
Term 1 Week 1	Data Management techniques Storing data safely Ethical and legal issues Word Processing skills	Introduction <ul style="list-style-type: none"> • introduction to the course • assessment requirements • expectations Managing data - Knowledge <ul style="list-style-type: none"> • data management techniques for personal computer use, including hierarchical storage of data using files and folders • issues related to ethics in the storage of personal data • features of word processing software, including common formatting functions Managing data - Skills <ul style="list-style-type: none"> • apply hierarchical file management techniques for personal computer use • use word processing software 	
Term 1 Week 2-4	Data Management techniques Storing data safely Word Processing skills Spreadsheet skills	Managing data - Knowledge <ul style="list-style-type: none"> • data management techniques for personal computer use, including hierarchical storage of data using files and folders • issues related to ethics in the storage of personal data • features of word processing software, including common formatting functions • features of spreadsheet software, including: <ul style="list-style-type: none"> ▪ simple functions (sum, average, min and max) ▪ simple formulae (addition, subtraction, multiplication and division) Managing data - Skills <ul style="list-style-type: none"> • apply hierarchical file management techniques for personal computer use • use word processing software • use spreadsheet software 	Task 1: Practical test – Word processing 5% (Term 1 Week 3) Task 2: Practical test – Spreadsheet 5% (Term 1 Week 4)



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<p>Term 1 Week 5-9</p> <p>Term 2 Week 1</p>	<p>Data structure, types and terms</p> <p>Data protection methods</p> <p>Database design and documentation</p> <p>Create a database</p>	<p>Managing data - Knowledge</p> <ul style="list-style-type: none"> • features of database software, including: <ul style="list-style-type: none"> ▪ components of a single table database (field, record, file) ▪ data entry forms ▪ simple search techniques ▪ create a simple query ▪ simple data types (number, text, Boolean, date, currency) <p>Managing data - Skills</p> <ul style="list-style-type: none"> • use database software 	<p>Task 3: Project – Create a database 15% (Term 1 Weeks 6-9, Term 2 Week 1)</p> <p>Task 4: Theory test – Managing data 5% (Term 1 Week 8)</p>
<p>Term 2 Week 2-4</p>	<p>How a computer works</p> <p>Types of computer systems</p> <p>Hardware components for a computer system</p> <p>Primary and Secondary storage</p> <p>Fetch-execute cycle</p> <p>Components of the CPU</p> <p>Connecting hardware devices</p>	<p>Systems analysis and development - Knowledge</p> <ul style="list-style-type: none"> • types of computer systems, including: <ul style="list-style-type: none"> ▪ mobile ▪ desktop ▪ server • flow of data through an information system <ul style="list-style-type: none"> ▪ input ▪ processing ▪ storage ▪ output • functions of computer hardware components, including: <ul style="list-style-type: none"> ▪ input <ul style="list-style-type: none"> ○ keyboard ○ mouse ○ microphone ○ digital camera/web cam ○ scanner ▪ processing <ul style="list-style-type: none"> ○ central processing unit (CPU) ○ control unit (CU) ○ arithmetic logic unit (ALU) ○ registers ▪ primary storage <ul style="list-style-type: none"> ○ random access memory (RAM) 	<p>Task 5: Project – Research and selection of computer system 10% (Term 2 Weeks 3-7)</p>



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		<ul style="list-style-type: none"> ○ read only memory (ROM) ▪ secondary storage <ul style="list-style-type: none"> ○ mechanical drive ○ solid state drive ○ online ▪ output <ul style="list-style-type: none"> ○ monitor ○ printer ○ speaker/headphones <p>Systems analysis and development - Skills</p> <ul style="list-style-type: none"> ● connect peripheral devices to a computer system using: <ul style="list-style-type: none"> ▪ ports ▪ universal serial bus (USB) ▪ Firewire ▪ PS2 ▪ Ethernet ▪ serial 	
Term 2 Week 5-7	<p>Operating Systems</p> <p>Stages of the SDLC</p> <p>Purpose of SDLC</p> <p>Hardware and Software</p> <p>Installing software</p> <p>Boot process</p> <p>Basic maintenance strategies</p>	<p>Systems analysis and development - Knowledge</p> <ul style="list-style-type: none"> ● the role of an operating system ● how user wants influence the choice, use and creation of personal computer systems ● types of hardware booting processes <ul style="list-style-type: none"> ▪ cold ▪ warm ▪ hot ● types of basic maintenance strategies and computer protection software, including: <ul style="list-style-type: none"> ▪ defragmentation ▪ error check ▪ disk clean ▪ back up ▪ anti-malware ● basic maintenance strategies and techniques to rectify simple computer difficulties, including: <ul style="list-style-type: none"> ▪ diagnosis of fault 	<p>Task 5: Project – Research and selection of computer system 10% (Term 2 Weeks 3-7)</p> <p>Task 6: Theory test – Systems analysis and development 5% (Term 2 Week 6)</p>



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<p>Term 2 Week 8-11</p> <p>Term 3 Week 1-2</p>	<p>Different types of software</p> <p>Software licensing requirements</p> <p>Copyright and piracy</p> <p>Purpose and stages of SDC</p> <p>Produce a website/application</p> <p>Create software solution</p>	<ul style="list-style-type: none"> ▪ implementation of a solution ▪ description of process • purpose of the systems development life cycle (SDLC) • stages of the SDLC <ul style="list-style-type: none"> ▪ preliminary analysis ▪ analysis ▪ design ▪ development ▪ implementation ▪ evaluation and maintenance <p>Systems analysis and development - Skills</p> <ul style="list-style-type: none"> • install simple software • apply the following hardware booting processes <ul style="list-style-type: none"> ▪ cold ▪ warm ▪ hot • apply basic maintenance strategies and computer protection software • apply basic care and handling of hardware equipment measures to ensure personal safety and appropriate use of components • apply basic maintenance strategies and techniques to rectify simple computer difficulties <p>Developing software - Knowledge</p> <ul style="list-style-type: none"> • hardware and software systems used in personal computing (applications, operating systems) • the roles of hardware, software and the user in a computer system • interrelationship between users, hardware and software in a personal computer system • requirements for software licensing, including: <ul style="list-style-type: none"> ▪ single user ▪ site licence • ethical and legal issues associated with software, including: <ul style="list-style-type: none"> ▪ copyright ▪ piracy • the purpose of the software development cycle (SDC) 	<p>Task 7: Project – Create a software application 10% (Term 2 Weeks 10-11, Term 3 Weeks 1-2)</p>
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		<ul style="list-style-type: none"> • stages of the SDC <ul style="list-style-type: none"> ▪ state the problem ▪ plan and design ▪ develop the solution ▪ test the solution ▪ evaluate the solution • comparison of website construction tools <p>Developing software - Skills</p> <ul style="list-style-type: none"> • modify an existing simple software solution • develop simple software solutions using the SDC 	
Term 3 Week 3-10	Programming data Types Variable naming Conventions Control structures Types of code Programming errors Data validation Pseudocode and flow charts Create a digital solution	<p>Programming - Knowledge</p> <ul style="list-style-type: none"> • the components of a computer program <ul style="list-style-type: none"> ▪ inputs ▪ processing ▪ outputs • control structures <ul style="list-style-type: none"> ▪ sequence ▪ selection ▪ iteration • the concepts of variables and data types, including: <ul style="list-style-type: none"> ▪ integer ▪ real ▪ character ▪ string <p>Programming - Skills</p> <ul style="list-style-type: none"> • use variables, data types, control structures and a simple programming language to develop a software solution • use web tools to create linked web pages 	<p>Task 8: Project – Create a computer program 15% (Term 3 Weeks 5-10)</p> <p>Task 9: Theory test – Programming 5% (Term 3 Week 7)</p> <p>Task 10: Practical test – Programming 10% (Term 3 Week 8)</p>

<p align="center">Term 4 Week 1-5</p>	<p>Types of networks</p> <p>Communication Terms</p> <p>Transmission media</p> <p>Hardware Components</p> <p>Protocols</p> <p>Network security</p> <p>Types of malware</p> <p>Create network Diagrams</p> <p>Factors affecting network speed</p> <p>Design and create a network for a client</p>	<p>Networks and communications - Knowledge</p> <ul style="list-style-type: none"> • features of a network, including the ability to share: <ul style="list-style-type: none"> ▪ files ▪ peripheral devices ▪ an internet connection ▪ storage devices • types of communication software, including: <ul style="list-style-type: none"> ▪ browser ▪ email ▪ web authoring ▪ scripting • key concepts, terminology and functions of common network components <ul style="list-style-type: none"> ▪ wired data transmission media <ul style="list-style-type: none"> ○ twisted pair ○ fibre optic ▪ wireless transmission ▪ data transmission speeds <ul style="list-style-type: none"> ○ megabits per second (Mbps) ○ gigabits per second (Gbps) • hardware components required for a personal area network (PAN) or home network, including: <ul style="list-style-type: none"> ▪ modem ▪ router ▪ wireless access point ▪ firewall • software requirements for a PAN or home network, including: <ul style="list-style-type: none"> ▪ browser ▪ plugin ▪ internet connectivity software • concept of internet protocols, including: <ul style="list-style-type: none"> ▪ hypertext transfer protocol (HTTP) ▪ hypertext transfer protocol secure (HTTPS) ▪ file transfer protocol (FTP) • the role of an internet service provider in a PAN or home network • effect of bandwidth availability on network functionality 	<p>Task 11: Project – Design a computer network for a household 10% (Term 4 Weeks 1-4)</p> <p>Task 12: Theory test – Network concepts 5% (Term 4 Week 3)</p>
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- methods to ensure reliability of internet data for personal use
- measures an individual can take to help maintain data privacy and security
- the role of users in maintaining the security of information transmitted through communication systems

Networks and communications - Skills

- analyse the suitability of a PAN or a home network solution
- use communication software to upload files to a web server
- connect common peripheral devices
- use Bluetooth to create a simple personal network
- create and administer a simple peer-to-peer network to:
 - share files
 - share peripheral devices (printer, scanner)
 - share internet connection