



**COURSE OUTLINE**  
**COMPUTER SCIENCE – GENERAL YEAR 11: 2022**  
**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 Week	Topic and key teaching points	Syllabus content	Assessments
Term 1 Week 1	Data Management techniques  Storing data safely  Ethical and legal issues  Word Processing skills	<b>Introduction</b> <ul style="list-style-type: none"> <li>• introduction to the course</li> <li>• assessment requirements</li> <li>• expectations</li> </ul> <b>Managing data - Knowledge</b> <ul style="list-style-type: none"> <li>• data management techniques for personal computer use, including hierarchical storage of data using files and folders</li> <li>• issues related to ethics in the storage of personal data</li> <li>• features of word processing software, including common formatting functions</li> </ul> <b>Managing data - Skills</b> <ul style="list-style-type: none"> <li>• apply hierarchical file management techniques for personal computer use</li> <li>• use word processing software</li> </ul>	
Term 1 Week 2-5	Data Management techniques  Storing data safely  Word Processing skills  Spreadsheet skills	<b>Managing data - Knowledge</b> <ul style="list-style-type: none"> <li>• data management techniques for personal computer use, including hierarchical storage of data using files and folders</li> <li>• issues related to ethics in the storage of personal data</li> <li>• features of word processing software, including common formatting functions</li> <li>• features of spreadsheet software, including:               <ul style="list-style-type: none"> <li>▪ simple functions (sum, average, min and max)</li> <li>▪ simple formulae (addition, subtraction, multiplication and division)</li> </ul> </li> </ul> <b>Managing data - Skills</b> <ul style="list-style-type: none"> <li>• apply hierarchical file management techniques for personal computer use</li> <li>• use word processing software</li> <li>• use spreadsheet software</li> </ul>	<b>Task 1:</b> Practical test – Word processing 5% (Term 1 Week 3)  <b>Task 2:</b> Practical test – Spreadsheet 5% (Term 1 Week 5)



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<b>Term 1 Week 6-10</b>	<p>Data structure, types and terms</p> <p>Data protection methods</p> <p>Database design and documentation</p> <p>Create a database</p>	<p><b>Managing data - Knowledge</b></p> <ul style="list-style-type: none"> <li>• features of database software, including:             <ul style="list-style-type: none"> <li>▪ components of a single table database (field, record, file)</li> <li>▪ data entry forms</li> <li>▪ simple search techniques</li> <li>▪ create a simple query</li> <li>▪ simple data types (number, text, Boolean, date, currency)</li> </ul> </li> </ul> <p><b>Managing data - Skills</b></p> <ul style="list-style-type: none"> <li>• use database software</li> </ul>	<p><b>Task 3:</b> Project – Create a database 12% (Term 1 Weeks 7-10)</p> <p><b>Task 4:</b> Theory test – Managing data 5% (Term 1 Week 8)</p>
<b>Term 2 Week 1-3</b>	<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><b>Systems analysis and development - Knowledge</b></p> <ul style="list-style-type: none"> <li>• types of computer systems, including:             <ul style="list-style-type: none"> <li>▪ mobile</li> <li>▪ desktop</li> <li>▪ server</li> </ul> </li> <li>• flow of data through an information system             <ul style="list-style-type: none"> <li>▪ input</li> <li>▪ processing</li> <li>▪ storage</li> <li>▪ output</li> </ul> </li> <li>• functions of computer hardware components, including:             <ul style="list-style-type: none"> <li>▪ input                 <ul style="list-style-type: none"> <li>○ keyboard</li> <li>○ mouse</li> <li>○ microphone</li> <li>○ digital camera/web cam</li> <li>○ scanner</li> </ul> </li> <li>▪ processing                 <ul style="list-style-type: none"> <li>○ central processing unit (CPU)</li> <li>○ control unit (CU)</li> <li>○ arithmetic logic unit (ALU)</li> <li>○ registers</li> </ul> </li> <li>▪ primary storage                 <ul style="list-style-type: none"> <li>○ random access memory (RAM)</li> </ul> </li> </ul> </li> </ul>	<p><b>Task 5:</b> Project – Research and selection of computer system 13% (Term 2 Weeks 2-6)</p>



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		<ul style="list-style-type: none"> <li>○ read only memory (ROM)</li> <li>▪ secondary storage             <ul style="list-style-type: none"> <li>○ mechanical drive</li> <li>○ solid state drive</li> <li>○ online</li> </ul> </li> <li>▪ output             <ul style="list-style-type: none"> <li>○ monitor</li> <li>○ printer</li> <li>○ speaker/headphones</li> </ul> </li> </ul> <p><b>Systems analysis and development - Skills</b></p> <ul style="list-style-type: none"> <li>● connect peripheral devices to a computer system using:             <ul style="list-style-type: none"> <li>▪ ports</li> <li>▪ universal serial bus (USB)</li> <li>▪ Firewire</li> <li>▪ PS2</li> <li>▪ Ethernet</li> <li>▪ serial</li> </ul> </li> </ul>	
<b>Term 2</b> <b>Week 4-6</b>	<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><b>Systems analysis and development - Knowledge</b></p> <ul style="list-style-type: none"> <li>● the role of an operating system</li> <li>● how user wants influence the choice, use and creation of personal computer systems</li> <li>● types of hardware booting processes             <ul style="list-style-type: none"> <li>▪ cold</li> <li>▪ warm</li> <li>▪ hot</li> </ul> </li> <li>● types of basic maintenance strategies and computer protection software, including:             <ul style="list-style-type: none"> <li>▪ defragmentation</li> <li>▪ error check</li> <li>▪ disk clean</li> <li>▪ back up</li> <li>▪ anti-malware</li> </ul> </li> <li>● basic maintenance strategies and techniques to rectify simple computer difficulties, including:             <ul style="list-style-type: none"> <li>▪ diagnosis of fault</li> </ul> </li> </ul>	<p><b>Task 5:</b> Project – Research and selection of computer system 13% (Term 2 Weeks 2-6)</p> <p><b>Task 6:</b> Theory test – Systems analysis and development 5% (Term 2 Week 5)</p>



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<p><b>Term 2</b> Week 7-10</p> <p><b>Term 3</b> 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"> <li>▪ implementation of a solution</li> <li>▪ description of process</li> <li>• purpose of the systems development life cycle (SDLC)</li> <li>• stages of the SDLC             <ul style="list-style-type: none"> <li>▪ preliminary analysis</li> <li>▪ analysis</li> <li>▪ design</li> <li>▪ development</li> <li>▪ implementation</li> <li>▪ evaluation and maintenance</li> </ul> </li> </ul> <p><b>Systems analysis and development - Skills</b></p> <ul style="list-style-type: none"> <li>• install simple software</li> <li>• apply the following hardware booting processes             <ul style="list-style-type: none"> <li>▪ cold</li> <li>▪ warm</li> <li>▪ hot</li> </ul> </li> <li>• apply basic maintenance strategies and computer protection software</li> <li>• apply basic care and handling of hardware equipment measures to ensure personal safety and appropriate use of components</li> <li>• apply basic maintenance strategies and techniques to rectify simple computer difficulties</li> </ul>	
		<p><b>Developing software - Knowledge</b></p> <ul style="list-style-type: none"> <li>• hardware and software systems used in personal computing (applications, operating systems)</li> <li>• the roles of hardware, software and the user in a computer system</li> <li>• interrelationship between users, hardware and software in a personal computer system</li> <li>• requirements for software licensing, including:             <ul style="list-style-type: none"> <li>▪ single user</li> <li>▪ site licence</li> </ul> </li> <li>• ethical and legal issues associated with software, including:             <ul style="list-style-type: none"> <li>▪ copyright</li> <li>▪ piracy</li> </ul> </li> <li>• the purpose of the software development cycle (SDC)</li> </ul>	<p><b>Task 7: Project – Create a software application 10%</b>            (Term 2 Weeks 9-10, Term 3 Weeks 1-2)</p>



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		<ul style="list-style-type: none"> <li>• stages of the SDC             <ul style="list-style-type: none"> <li>▪ state the problem</li> <li>▪ plan and design</li> <li>▪ develop the solution</li> <li>▪ test the solution</li> <li>▪ evaluate the solution</li> </ul> </li> <li>• comparison of website construction tools</li> </ul> <p><b>Developing software - Skills</b></p> <ul style="list-style-type: none"> <li>• modify an existing simple software solution</li> <li>• develop simple software solutions using the SDC</li> </ul>	
<b>Term 3</b> <b>Week 3-10</b>	Programming data Types Variable naming Conventions Control structures Types of code Programming errors Data validation Pseudocode and flow charts Create a digital solution	<p><b>Programming - Knowledge</b></p> <ul style="list-style-type: none"> <li>• the components of a computer program             <ul style="list-style-type: none"> <li>▪ inputs</li> <li>▪ processing</li> <li>▪ outputs</li> </ul> </li> <li>• control structures             <ul style="list-style-type: none"> <li>▪ sequence</li> <li>▪ selection</li> <li>▪ iteration</li> </ul> </li> <li>• the concepts of variables and data types, including:             <ul style="list-style-type: none"> <li>▪ integer</li> <li>▪ real</li> <li>▪ character</li> <li>▪ string</li> </ul> </li> </ul> <p><b>Programming - Skills</b></p> <ul style="list-style-type: none"> <li>• use variables, data types, control structures and a simple programming language to develop a software solution</li> <li>• use web tools to create linked web pages</li> </ul>	<p><b>Task 8:</b> Project – Create a computer program 15% (Term 3 Weeks 5-10)</p> <p><b>Task 9:</b> Theory test – Programming 5% (Term 3 Week 7)</p> <p><b>Task 10:</b> Practical test – Programming 10% (Term 3 Week 8)</p>

<p><b>Term 4</b> <b>Week 1-5</b></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><b>Networks and communications - Knowledge</b></p> <ul style="list-style-type: none"> <li>• features of a network, including the ability to share: <ul style="list-style-type: none"> <li>▪ files</li> <li>▪ peripheral devices</li> <li>▪ an internet connection</li> <li>▪ storage devices</li> </ul> </li> <li>• types of communication software, including: <ul style="list-style-type: none"> <li>▪ browser</li> <li>▪ email</li> <li>▪ web authoring</li> <li>▪ scripting</li> </ul> </li> <li>• key concepts, terminology and functions of common network components <ul style="list-style-type: none"> <li>▪ wired data transmission media <ul style="list-style-type: none"> <li>○ twisted pair</li> <li>○ fibre optic</li> </ul> </li> <li>▪ wireless transmission</li> <li>▪ data transmission speeds <ul style="list-style-type: none"> <li>○ megabits per second (Mbps)</li> <li>○ gigabits per second (Gbps)</li> </ul> </li> </ul> </li> <li>• hardware components required for a personal area network (PAN) or home network, including: <ul style="list-style-type: none"> <li>▪ modem</li> <li>▪ router</li> <li>▪ wireless access point</li> <li>▪ firewall</li> </ul> </li> <li>• software requirements for a PAN or home network, including: <ul style="list-style-type: none"> <li>▪ browser</li> <li>▪ plugin</li> <li>▪ internet connectivity software</li> </ul> </li> <li>• concept of internet protocols, including: <ul style="list-style-type: none"> <li>▪ hypertext transfer protocol (HTTP)</li> <li>▪ hypertext transfer protocol secure (HTTPS)</li> <li>▪ file transfer protocol (FTP)</li> </ul> </li> <li>• the role of an internet service provider in a PAN or home network</li> <li>• effect of bandwidth availability on network functionality</li> </ul>	<p><b>Task 11:</b> Project – Design a computer network for a household 10% (Term 4 Weeks 1-4)</p> <p><b>Task 12:</b> 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