Computing Year 12 Curriculum Map – Introductory Diploma

Notre Dame Catholic College

YEAR 12	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Curriculum Content	Unit 1 Fundamentals of IT **Composite = Understand computer hardware:** This topic will focus on the hardware involved in running a computing device this will include internal and external hardware. Pupil's will also explore different types of computer systems, connectivity types, communication hardware, troubleshooting hardware problems and gain an understanding of number systems. **Component 1.1** Computer hardware **Component 1.2** Computer components **Component 1.3** Types of computer systems **Component 1.4** Connectivity (wired & wireless) **Component 1.5** Communication hardware **Component 1.6** Hardware troubleshooting **Component 1.7** Units of measurement **Component 1.8** Number systems **Component 1.9** Number conversions Unit 7 Data Analysis and Design – LO1 P1 and P2 **Composite = Understand the purpose and stages of data analysis and design** This topic will focus on different types of data (qualitative, quantitative , structured and unstructured as well as each of the stages of data analysis. In addition pupils will be able to explain why it is important to accurately identify information requirements prior to data collection **Component 1.1** Data Types **Component 1.2** Stages of data analysis	Unit 1 Fundamentals of IT **Composite = Understand computer software:** This topic will focus on the software involved in running a computing device this will include open sourced and closed sourced software. Pupil's will also explore applications software, utility and operating systems software and look at the functions, benefits and limitations too. Pupil' will also develop an understanding of communication methods and troubleshooting software problems as well as exploring protocols that aid with communication over a network. **Component 2.1** Types of software **Component 2.2** Application software **Component 2.3** Utility software **Component 2.4 – 2.6** Operating systems, functions, benefits and limitations. **Component 2.7** Communication methods **Component 2.8** Software troubleshooting **Component 2.9** Protocols Unit 7 Data Analysis and Design – LO1 M1 **Composite = Understand the purpose and stages of data analysis and design** This topic will focus on the importance of accurately defining information requirements **Component 1.3** Importance of accurately defining information requirements Unit 7 Data Analysis and Design – LO2 P3 **Composite = Understand the purpose and stages of data analysis and design** This topic will focus on the importance of accurately defining information requirements **Component 2.1** Investigate information requirements **Component 2.2** Techniques **Component 2.3** Qualitative data analysis **Component 2.4** Quantitative data analysis	Unit 1 Fundamentals of IT **Composite = Understand Business IT Systems:** This topic will focus on how business data is communicated through IT systems, by exploring how devices communicate with each other over a network. Pupil's will also explore how servers manage different types of data on a network too. Pupil's will also develop an understanding of network characteristics such layouts, models and connectivity methods. Finally, pupils will develop an understanding of the different business systems that are used within organisations. **Component 3.1** Types of servers **Component 3.2** Virtualisation **Component 3.3** Network characteristics **Component 3.4** Connectivity methods **Component 3.5** Business systems Unit 7 Data Analysis and Design – LO2 P4 / M2 **Composite = Understand the purpose and stages of data analysis and design** This topic will focus on the importance of accurately defining information requirements **Component 2.1** Investigate information requirements **Component 2.2** Techniques **Component 2.3** Qualitative data analysis **Component 2.4** Quantitative data analysis	Unit 1 Fundamentals of IT **Composite = Understand employability and communication skills used in an IT environment:** This topic will focus on the employability and communication skills needed to be successfully employed in an IT environment. Pupil's will develop a knowledge of different types of communication skills i.e. interpersonal, verbal, written etc. Pupil's will also gain an understanding of the different types of communication technology available too. Pupil's will also learn about different types of personal attributes, what you need to be ready for work and develop an understanding of different types of IT job roles also. Lastly, pupils will develop a knowledge of different IT professional bodies and industry certification too. **Component 4.1** Communication skills **Component 4.2** Communication Technology **Component 4.3** Personal Attributes **Component 4.4** Ready for work **Component 4.5** Job roles **Component 4.6** Professional bodies **Component 4.7** Industry certification Unit 7 Data Analysis and Design – LO3 P5 **Composite = Be able to develop data design solutions to meet business requirements** This will focus on creating the documentation setting out the scope of the model and the logical data model itself **Component 3.1** Levels of data model design **Component 3.2** Phases of logical data modelling	Unit 1 Fundamentals of IT **Composite = Understand ethical and operational issues and threats to computer systems:** This topic will focus on the ethical, operational, threats, security and disposal issues that computer systems can be susceptible too. Pupil's will develop a knowledge of different types of ethical issues such as whistle blowing and disability discrimination. Pupil will also gain an understanding of the different types of operational issues that need to considered when using computer systems. Pupil's will also learn about different types of threats such as hackers and phishing, which will then develop a understanding of both the physical and digital security preventions too. Lastly pupils will develop a knowledge of how to safely dispose of data and computer equipment whilst studying legal and environmental considerations. **Component 5.1** Ethical issues **Component 5.2** Operational issues **Component 5.3** Threats **Component 5.4** Physical security **Component 5.5** Digital security **Component 5.6** Safe disposal of data and computer equipment Unit 7 Data Analysis and Design -LO3 D1 and D2 **Composite = Be able to develop data design solutions to meet business requirements** This will focus on creating the documentation setting out the scope of the model and the logical data model itself **Component 3.1** Levels of data model design **Component 3.2** Phases of logical data modelling	Unit 2 Global Information **Composite = Understand where information is held globally and how it is transmitted.** This topic will focus on the different holders of information such as businesses and government. Pupil's will also develop a knowledge of the different types of media and digital storage that can store this information. Pupil's will also develop an understanding of how information can be conveyed using World Wide Web technologies such as the internet, intranet etc. Pupil's will also develop an understanding of different formats this information can conveyed on the internet and also develop a knowledge of the advantages and disadvantages of information being communicated this way too. **Component 1.1** Holders of information **Component 1.2** Types of information storage media **Component 1.3** Types of information access and storage devices **Component 1.4** The Internet **Component 1.5** World Wide Web (www) technologies **Component 1.6** Information formats **Component 1.7** Advantages **Component 1.8** Disadvantages Unit 7 Data Analysis and Design LO4 P6 and M3 **Composite = Present your findings to the client** This will focus on presentation of findings and recommendations for the case study which will be presented to the class **Component 4.1** Data design documentation **Component 4.2** Presentation of a solution **Component 4.3** Evaluation of Design solution

Prior knowledge and skills (from previous year / key stage)	Unit 1 - Pupils will may have some knowledge of computer hardware and how it functions. Pupils may have some knowledge of number systems such as binary and denary. Pupils will have little to no knowledge of the function of motherboard ports, connectivity methods and some communication hardware. Unit 7 – Pupils will have some prior understanding of how data is processed to become information, and will be able to use PowerPoint and word to a business level standard	Unit 1 - Pupils will have some knowledge of application software such as productivity software. Pupils may have some knowledge of operating system software and communication methods too. Pupil's will have no knowledge of utility software or protocols. Unit 7 - Pupils will understand different types of data and the stages of data analysis	Unit 1 - Pupils will have some knowledge of how networks function. Pupils may have a limited understanding of how data is transmitted on a network. Pupils will have no knowledge of virtualisation and business systems. Unit 7 - Pupils will understand scenario for analysis and will have stablished the data requirements for the case study	Pupils will have some knowledge of personal attributes associated with employment. Pupils will have some knowledge communication technology too. Pupils may have no knowledge of professional bodies and industry certification. Unit 7 - Pupils will understand scenario for analysis and will have stablished the data requirements for the case study	Pupils may recognise some of the concepts of ethical and operational issues of computer systems. Pupils may recognise some legal and privacy issues such as data security and copyright legislation.	Pupils will have some knowledge of data holders such as individuals. Pupil's will also have some knowledge of different types of media and how it can be stored. Pupil's will also have some understanding of how information can be conveyed via the world wide web.
Vocabulary / Key Subject Terminology	Hardware, Central Processing Unit (CPU), Arithmetic Logic Unit (ALU), Control Unit (CU), Registers, PC (Program Counter), Memory Address Register (MAR), Memory Data Register (MDR), Accumulator (ACC), Cache Memory, Fetch, Decode, Execute, Cycle, Embedded Systems, Functions, Process, Data, Instructions, Networks, Hardware, Network Interface Controller (NIC), Wireless Access Point (WAP), Switch, Router, Registers, Internet, Internet Service Provider (ISP), Client, Unit, Bit, Nibble, Byte, Kilobyte, Megabyte, Gigabyte, Terabyte, Petabyte, Language, Binary, Byte, Denary, Decimal, Hexadecimal, Hex, Number, Conversion. Data, Information, Qualitative, Quantitative, Structured, Unstructured, Data Collection, Observations, Interviews, Review of Existing Data, Data Organisation, Digitalisation, Transcription, Sorting, Data Mining, Data Storage, In–House, External, Data Cleansing, Errors, Missing Elements, Duplicates, Data Manipulation, Arranging, Collating, Aggregating, Interpreting, Correlation, Presentation of Findings, Tables, Charts, Graphs, Dashboard, Reports.	Software, Open Sourced, Closed Sourced, Off The Shelf, Application, Productivity, Development Tools, Business, Operating System, Utility, Encryption, Defragmentation, Compression, User Interface, Memory Management, Peripheral Management, User Management, File Management, Email, Text Messaging, Short Message Service, Voiceover Internet Protocol, Personal Assistant, Troubleshooting, Faults, Protocols, Rules, Standards, TCP (Transmission Control Protocol), UDP (User Datagram Protocol), IP (Internet Protocol), HTTP (Hyper Text Transfer Protocol), FTP (File Transfer Protocol), IMAP (Internet Message Access Protocol), SMTP (Simple Mail Transfer Protocol), SNMP (Simple Network Management Protocol). Accurately Defining Information Requirements, Time Wasting, Aids Planning, Data Capture, Data Organisation and Storage, Cleaning and Manipulation and Presentation of Results. Business Intelligence, Scientific Research, Medical Research, Political Information, Collecting Data, Focus Groups, Preparing and Distributing Questionnaires and Surveys, Stakeholders, Typology. Activities, Actions, Relationships, Event Analysis, Logical Analysis, Flow Charts, Flow Diagrams, Mean, Median, Standard Deviation, Range, Sort, Filter, Pivot Table, Import, Data Base, Queries, Reports Data Sets.	Server, File, Print, Application, Database, Web, Email, Hypervisor, Virtualisation, Storage Virtualisation, Cloud Computing, Hybrid Cloud, Peer-to-Peer, Network, Star, Bus, Ring, Mesh, Client Server, LAN (Local Area Network), WAN (Wide Area Network), MAN (Metropolitan Area Network), Voice, Satellites, Business Systems, MIS (Management Information Systems), CRM (Customer Relations Management), SOP (Standard Operating Procedures), Help Desk. Business Intelligence, Scientific Research, Medical Research, Political Information, Collecting Data, Focus Groups, Preparing and Distributing Questionnaires and Surveys, Stakeholders, Typology. Activities, Actions, Relationships, Event Analysis, Logical Analysis, Flow Charts, Flow Diagrams, Mean, Median, Standard Deviation, Range, Sort, Filter, Pivot Table, Import, Data Base, Queries, Reports Data Sets.	Employability, Communication, Skills, Interpersonal, Verbal, Questioning, Techniques, Open, Closed, Written, Barriers, Noise, Language, Physical, Technology, Presentation, Software, Word Processing, Email, Web, Browsers, Internet, Blog, Vlog, Instant Messaging, Personal, Attributes, Decisiveness, Punctuality, Self-motivation, Leadership, Respect, Dependability, Problem Solving, Determination, Independence, Time Management, Team Working, Numerical, Planning, Organisation, Ready, Work, Dress code, Attitude, Network Manager, IT Technician, Programmer, Web Designer, Animator, Software Engineer, Professional Bodies, Industrial Certification. Purpose, Data Design Model, Project Type, Project Goals, Issues, Resource Limitations, Design Work, Conceptual Design, Prototyping, User Research, Team Members, Major Deliverables and Milestones.	Digital, Technology, Devices, Ethical, Ethics, Whistle blowing, Disability, Gender, Sexuality, Discrimination, DPA (Data Protection Act, 2018), Code of Practice, Safe, Online, Operational, Security, Information, Health, Safety, Disaster, Recovery, Planning, Organisational, Policies, Change Drivers, Scale, Threats, Malware, Viruses, Worms, Trojans, Ransomware, Spyware, Social Engineering, Phishing, Pretexting, Shouldering, Brute Force Attacks, Denial of Service (DoS) Attacks, Data Interception, Theft, Packet Sniffing, Man in the Middle (MITM) Attacks, Physical, Digital, Security, Locks, Keypads, Biometric Readers, Radio Frequency Identification (RFID), Tokens, Privacy Screens, Shredding, Cutting, Anti-virus, Software, Usernames, Passwords, Firewalls, Packet Filtering, Proxy, Inspection, Permissions, User Access Levels, Encryption, Encrypting, Cultural, Legislation, Waste Electronic and Electrical Equipment (WEEE), Waste Acceptance Criteria (WAC), Hazard Waste Regulations, Freedom of Information Act, Overwriting, Electromagnetic Wipe, Environmental, Copyright, Data, Disposal. Structure, Entities, Relationships, Attributes, Keys, Primary, Foreign, Normalisation, Queries, Data Dictionary, Manipulation, Updating, Retrieving, Editing, Deletion, Integrity, Validation.	Holders, Information, Categories, Individual, Business, Government, Charities, Location, Developing, Developed, Urban, Rural, Storage, Media, Paper, Optic, Magnetic, Solid State, Characteristics, Mutability, Robustness, Access, Cost, Capacity, Purpose, Advantages, Disadvantages, Handheld, Devices, Portable, Fixed, Shared, Internet, Connections, World Wide Web (WWW), Intranet, Extranet, Public, Private, Web Pages, Blogs, Podcasts, Streamed Audio, Video, Social Media Channels, Document, Accessibility. Data flow diagrams (DFDs), Information Flow Charts, Entity Attribute Relationship Diagrams (EARD), Hierarchical Tree Diagram, Events Entire Life History (ELH). Achievable, Manageable, Extendable.
Assessment 1	Unit 1 LO1 – End of Topic Test – 1.1 – 1.6 Computer Hardware Unit 7 LO1 P1- Production of a presentation including: an explanation of the different data types	Unit 1 LO2 – End of Topic Test – Computer Software Unit 7 LO1 M1- Production of a handbook that explains the importance of accurately identifying information requirements prior to data collection	Unit 1 LO3 – End of Topic Test – IT Business Systems Unit 7 LO2 P4- Production of a reports that establishes the data analysis and design requirements for a specified business requirement	Unit 1 LO4 – End of Topic Test – Employability and Communication Skills in IT Unit 7 LO3 P5 – Production of word document that outlines the scope of	Unit 1 LO5 – End of Topic Test – Ethical and Operational Issues Unit 7 LO2 D1– Production of word document and DFDs, conceptual data models and logical data models that provide a logical view of the data	Unit 2 LO1 – End of Topic Test – How Global Information is Held and Transmitted. Unit 7 L04 – P6 and M3 Creation of a business presentation with data diagrams from Lo3 that will be used to

				the data design model for a specified business requirement	required for the new business and how they are related.	present to client recommendations and justifications
Assessment 2	Unit 1 LO1– End of Topic Test – 1.7-1.9 Number Systems and Conversions Unit 7 LO1 P2 Production of a presentation including a summary of the purpose of each stage of data analysis and the types of activity or data each stage covers.	AP1 Cambridge Technical Unit 1 Fundamentals of IT Assessment focusing on AUT1/AUT2 theory Unit 7 LO2 P3- Production of a reports that establishes the data analysis and design requirements for a specified business requirement	Unit 7 LO2 M2- Production of a reports that shows how data has been gathered for the specified business requirement using quantitative and qualitative techniques. Develop the data requirements for the specified business requirement using different qualitative and quantitative data analysis methods	AP2 Cambridge Technical Unit 1 Fundamentals of IT Assessment Past Paper (80 Marks) Exam	Cambridge Technical Unit 1 Fundamentals of IT Assessment Past Paper (80 Marks) Exam Unit 7 LO2 D2– Production of word document and DFDs, conceptual data models and logical data models that provide a logical view of the data required for the new business and how they are related.	AP3 Cambridge Technical Unit 1 Fundamentals of IT Exam (Jun 2021)
Extra-Curricular Offer						
Time Allocation	Autumn 1, 8 weeks, 5 lessons per week Unit 1 - 3 lessons per week Unit 13 – 2 lesson per week	Autumn 2, 7 weeks, 5 lessons per week Unit 1 - 3 lessons per week Unit 13 – 2 lesson per week	Spring 1, 6 weeks, 5 lessons per week Unit 1 - 3 lessons per week Unit 13 – 2 lesson per week	Spring 1 & Spring 2, 6 weeks, 2.5 lessons per week Unit 1 - 3 lessons per week Unit 13 – 2 lesson per week	Summer 1, 4 weeks, 2.5 lessons per week Unit 1 - 3 lessons per week Unit 13 – 2 lesson per week	Summer 2, 6 weeks, 2.5 lessons per week Unit 2 - 3 lessons per week Unit 13 – 2 lesson per week