St Mary's CE High School Curriculum Map 2022-23

Subject: BTEC Level 3 National Diploma in Information Technology (double)
Year: 13

Unit 4 Programming

Unit 9 IT Project Management

	Autumn 1 **Learning Aim A: Examine the computational thinking skills and principles of computer programming**	Autumn 2 **Learning Ain B: Design a software solution to meet client requirements** **Learning Aim B: Carry out a project initiation for an IT project**	Spring 1 **Learning Ain B: Design a software solution to meet client requirements** **Learning Aim B: Carry out a project initiation for an IT project**	Spring 2 **Learning Ain C: Develop a software solution to meet client requirements** **Learning Aim C: Carry out the planning, execution, monitoring and controlling of an IT project, using an appropriate methodology**	Summer 1 **Learning Ain C: Develop a software solution to meet client requirements** **Learning Aim C: Carry out the planning, execution, monitoring and controlling of an IT project, using an appropriate methodology**	Summer 2 **Learning Ain C: Develop a software solution to meet client requirements** **Learning Aim D: Undertake the closure of a project by reflecting on the success of personal performance and the project outcome**
CONTENT	**A1 -** Computational thinking skills **A2 –** Uses of software applications **A3 –** Features and characteristics of programming languages **A4 –** Constructs and techniques and their implementations in different languages **A5 –** Principles of logic applied to program design **A6 –** Quality of software applications	**B1 –** Software development lifecycle **B1 –** Project idea generation and solution creation **B2 –** Feasibility study	**B2 –** Software solution design **B3 –** Project requirements	**C1 –** Software solutions development **C2 -** Testing software solutions **C1 –** Project phasing	**C3 –** Improvement, refinement and optimisation of software applications **C4 –** Review of software solutions **C2 -** Typical project management processes	**C5 –** Skills, knowledge and behaviours **D1 -** Lessons learned from implementing an IT project

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SKILLS	Students will learn about the application of computational thinking skills involved in the analysing of problems and processes, in order to identify solutions that can be developed into software applications. Students will explore the uses and implications of software applications in solving problems and fulfilling needs. They will explore the uses & applications of different types of high and low-level programming languages, developed to assist in the solution of problems. Students will develop their knowledge of programming languages including the different constructs and techniques implemented within these programming languages. They will develop their understanding of the principles of logic that can be applied to program design and how the design and implementation of software applications can affect the quality.	Students will design a software solution to meet client requirements, they will explore how the application of the stages of the software development life-cycle can impact a project and help to come to a final project. Students will carry out project initiation for an IT project. They will identify a suitable problem (this comes from their unit 4 coursework) and create suitable solutions for this problem. Students will then complete a feasibility study for the project this will include identifying the resources and skills required to produce the IT product, service or system, and ensure that it is economically viable.	Students will develop their software solution designs for their project to meet client requirements. This will include the intended users, any constraints and benefits, the complexity of the problem, it purpose. IT will also include design documentation like pseudocode and flowchart's and a test plan. Students will create the documentation to outline their project requirements including: - Introduction to the project - Functions & characteristics - Requirement specification – designs, interfaces, functionality, design constraints, time, budget etc. - Success criteria for the project i.e. test plan	Students will develop their planned software solution including the development and refinement of their code. Once students have started to create their software application they will develop their testing skills as their code will need to be tested throughout its creation and once the application is completed. Students will carry out the planning or their IT project. Students will divide their larger user requirements into more specific functional/non-functional requirements. Students will carry out the different stages of the project lifecycle including planning, execution, monitoring and controlling.	Students will develop their ability to improve, refine and optimise their software application through reviewing the application in terms of its reliability, usability, efficiency, maintainability and its portability. They will also gather feedback from their peers and improve their application as necessary. Students will use typical project management processes to manage the development of their project, this may include planning and monitoring, risk and issue, execution and management processes.	Students will evaluate their own performance, knowledge and behaviours. Students will develop their analytical skills and their evaluative skills. Students will undertake the closure of a their project by reflecting on the success of their own personal performance and the project outcome

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KEY QUESTIONS	What are the different computational methods used within computer programming? What are the uses and implications of software applications in solving and fulfilling needs in computing? What are the uses and applications of different high and low-level programming languages? What are the constructs and techniques and their implementation in different languages? What are the principles of logic applied to program design? What are the different qualities of software applications?	What are the different stages of the software development life cycle? What does each stage of the project life cycle do? How do you identify a possible solution of an IT project? What is a feasibility study? What are the different stages of a feasibility study and what do they do?	What are software solutions to a problem? What are the different features of software? Why is it important to get feedback from others to help refine alternative design ideas? Why is it important to create a test plan? What are the different technical and design constraints? What are the different documentation methods that outline the project requirements? Why is it important to identify the success criteria of the project? Why is it important to outline how the project will be tested?	What are the different processes of software development? How do we test a computer program? What is the importance of choosing the correct method of testing? What is project phasing? What is the division of larger user requirements? What does implementation cover?	What are the different methods of improving, refining and optimising software applications? Why is it important to make use of outcomes of testing and feedback? What is the importance of documenting changes to design and solutions? What is the importance of evaluating software solutions? What are the typical project management processes? What are the tools used to plan and monitor a project? What is the importance of risk and issue management?	What are the quality characteristics? What skills, knowledge & behaviours are needed to develop a software solution? What lessons can be learned from implementing an IT project? What skills, knowledge & behaviours are needed to implement an IT project?
ASSESSMENT	A report examining the computational thinking skills and principles of computer programming	A report containing design documentation of a software solution to meet client requirements A report carrying out the initiation of an IT project	A report containing design documentation of a software solution to meet client requirements A report carrying out the initiation of an IT project	A report detailing a software solution to meet client requirements A report carrying out the planning, execution, monitoring and controlling of an IT project using a appropriate methodology	A report detailing a software solution to meet client requirements A report carrying out the planning, execution, monitoring and controlling of an IT project using an appropriate methodology	A report detailing a software solution to meet client requirements A report undertaking the closure of a project by reflecting on the success of personal performance and the project outcome