

Course Description

In the Year 9 Technology, students learn about designing and developing technological outcomes across a variety of contexts. There is a strong focus on the Digital Technologies curriculum components and how digital technologies are used to enhance other areas of Technology as well as other learning areas.

Technology at Year 9 provides students with the opportunity work in collaborative teams to design, and develop their own computer game, and a unique e-Textile outcome. Students will also apply their knowledge in cross-curricular projects with science and maths. Across the contexts, they work to develop their knowledge of electronics, programming, textiles and food production. Students will develop transferable skills, such as research, problem solving, technical skills, and computational thinking.

Course Modules		
<i>Module</i>	<i>Module Description</i>	<i>Progress Outcome /Achievement Objective Focus</i>
Graphics and Animations for Programs and Digital Outcomes	<p>The module focuses key aspects of creating and using digital images for use developing digital content:</p> <ul style="list-style-type: none"> • using search tools to ensure they are using non-copyright imagery for their digital outcomes. • creating sprites and animations for use in programs or other digital outcomes • file types for digital images • how images are represented with pixels 	<p>DDDO – Progress Outcome 3: They identify the key features of selected software and choose the most appropriate software and file types to develop and combine digital content.</p> <p>CT – Progress Outcome 5: They understand how computers store more complex types of data using binary digits.</p>
Algorithms and Programming	<p>The module focuses on key aspects of solving problems through a combination of unplugged activities and developing computer programs, with a specific cross-curricular focus on Maths:</p> <ul style="list-style-type: none"> • developing strategies for decomposing problems • writing simple algorithms in natural language assist in breaking down problems and understanding required logic for building a program • developing computer programs in Scratch that use inputs, outputs, sequence, basic selection using comparative operators, and iteration 	<p>CT – Progress Outcome 4: In authentic contexts and taking account of end-users, students decompose problems to create simple algorithms using the three building blocks of programing: sequence, selection, and iteration. They implement these algorithms by creating programs that use inputs, outputs, sequence, basic selection using comparative operators, and iteration. They debug simple algorithms and programs by identifying when things go wrong with their instructions and correcting them, and they are able to explain why things went wrong and how they fixed them.</p>

Designing and Developing an Educational Computer Game	<p>This module consolidates the learning in the two previous modules, through a team project in which the students develop their own educational Maths game with mini-games. In developing their game, students:</p> <ul style="list-style-type: none"> • design, develop, store, test and evaluate your computer game program • develop a game to address the need to have more creative and engaging maths games for the Year 9 students at St Hilda's • ensure the game design is appropriate to be played at school, has the correct content for Year 9 maths and is accessible on to be played over the internet on the student laptops. • share your game on the Scratch website to contribute to others and the open source software movement • combine digital content (sprites that they have created on Piskelapp) with your Scratch programming 	<p>DDDO – Progress Outcome 3: In authentic contexts, students follow a defined process to design, develop, store, test and evaluate digital content to address given contexts or issues, taking into account immediate social, ethical and end-user considerations. They identify the key features of selected software and choose the most appropriate software and file types to develop and combine digital content.</p> <p>CT – Progress Outcome 4: In authentic contexts and taking account of end-users, students decompose problems to create simple algorithms using the three building blocks of programming: sequence, selection, and iteration. They implement these algorithms by creating programs that use inputs, outputs, sequence, basic selection using comparative operators, and iteration. They debug simple algorithms and programs by identifying when things go wrong with their instructions and correcting them, and they are able to explain why things went wrong and how they fixed them.</p>
Electronics – Cross Curricular Project with Science - Rockets	<p>This module focuses on learning basic electronics concepts in order to develop, design and test outcomes that use electronic component to measure and collect data. In a cross-curricular project with Science, students will develop a rocket, with a simple circuit board and sensors, to collect data about the rocket's acceleration, height and speed. Students learn how to:</p> <ul style="list-style-type: none"> • create simple circuits • use input sensors to control output • program input sensors to collect data • analyse data collected through sensors • trial and test different materials and designs to create a rocket 	<p>DDDO – Progress Outcome 3: Students identify the specific role of components in a simple input-process-output system and how they work together, and they recognise the "control role" that humans have in the system.</p> <p>CT – Progress Outcome 3: They understand that digital devices store data using just two states represented by binary digits (bits).</p> <p>TK Level 4 – Technological Systems: Understand how technological systems employ control to allow for the transformation of inputs to outputs.</p> <p>TK Level 4 – Technological Modelling: Understand how different forms of functional modelling are used to explore possibilities and to justify decision making and how prototyping can be used to justify refinement of technological outcomes.</p>
Designing and Developing and e-Textiles Outcome	<p>This module builds upon the electronics and programming knowledge from the previous module, allowing students to use a different range of electronics components, conductive materials and microcontroller platform (LilyPad Arduino). The final outcome will be an eTextiles garment/accessory designed</p>	<p>NoT – Level 4 - Understand how technological development expands human possibilities and how technology draws on knowledge from a wide range of disciplines.</p> <p>TK Level 4 – Technological Systems: Understand how technological systems employ control to allow for the transformation of inputs to outputs.</p>

	<p>by the student team. Through the development of their outcome, students learn:</p> <ul style="list-style-type: none"> • hand-stitching and sewing skills • measurement, cutting to patterns • the properties of different materials, related to conductivity • how to program input sensors to control output • design an outcome to 	<p>TK Level 4 -- Technological products: Understand that materials can be formed, manipulated, and/or transformed to enhance the fitness for purpose of a technological product</p> <p>TP Level 4 - Outcome development and evaluation: Investigate a context to develop ideas for feasible outcomes. Undertake functional modelling that takes account of stakeholder feedback in order to select and develop the outcome that best addresses the key attributes. Incorporating stakeholder feedback, evaluate the outcome’s fitness for purpose in terms of how well it addresses the need or opportunity.</p> <p>CT – Progress Outcome 4: In authentic contexts and taking account of end-users, students decompose problems to create simple algorithms using the three building blocks of programing: sequence, selection, and iteration. They implement these algorithms by creating programs that use inputs, outputs, sequence, basic selection using comparative operators, and iteration. They debug simple algorithms and programs by identifying when things go wrong with their instructions and correcting them, and they are able to explain why things went wrong and how they fixed them.</p>
<p>Food Technology – Cross Curricular Project with Science - Preserves</p>	<p>In a cross-curricular project with Science, students will learn about food preservation methods to:</p> <ul style="list-style-type: none"> • make preserves that will be added to our school Christmas food hampers • design and develop a label for their preserves. 	<p>TK Level 4 -- Technological products: Understand that materials can be formed, manipulated, and/or transformed to enhance the fitness for purpose of a technological product</p> <p>DDDO – Progress Outcome 3: They identify the key features of selected software and choose the most appropriate software and file types to develop and combine digital content.</p>