

.Year 9

Term	What do students learn?	Justification Why is this knowledge taught here? How does this build on prior learning within the year and across years?	Skills Developed? How do these build with time and across years?	Threshold Concepts	Reading, vocabulary and oracy Digital Literacy	Assessment	Curriculum Knowledge and Catholic Social Teaching
1	Compact Living This project is a collaborative task. Students work in small groups with an assigned role related to Design, Architecture or Engineering. The design brief asks for the design of a studio apartment for a chosen client with a range of needs, so they can live comfortably within a small space. Students explore social issues pertaining to housing in urban environments and how design, architecture and engineering can provide solutions to real-life problems.	Students are provided with more information on the careers related to Design and Technology, complementary subjects, and routes for further study. They also learn to design for a range of user needs; in line with the NEA research section which is started in Year 10.	STEM Creativity - Risk-taking attitude to understand more about a topic and use these findings to develop an idea. Enquiry - Opinions are sought from others throughout the design process. Design decisions are based on facts and responses. Maths and Science - Measuring and marking accurately, understanding how the human hand works, robotics in space travel. Engineering and Design Thinking - Research possible solutions to an identified problem. Design, refine and modify ideas based on findings. Critical Thinking - Analysis and evaluation of information, plus own thinking, to come up with ideas. Collaboration - Working well as part of a team and utilising the skills of others to complete a task effectively.	Students learn: Careers information: Design, Engineering and Architecture. Designing and modelling to solve real-life problems. Types of motion, levers and linkages: how these can enhance product function. Working collaboratively and utilising the skill-set of the team effectively.	Keywords and subject terminology. Using the “language” of Product Design when explaining design decisions and manufacturing intentions. Digital portfolio of work using Google Slides.	Project Outcome and worksheets. Key Assessment: Maths in D&T (fractions & percentages, perimeter, area and volume, angles) Tools and Equipment Electronic Circuits Timber Types and Sustainability Plastic Types and Sustainability Designing for Others	Dignity - design for inclusivity. Solidarity - we recognise our unique talents and support each other. Common good - problem-solve to improve quality of life.

2	Security Students design and manufacture a small security box, with a light activated switch circuit, which will develop their knowledge about commonly used electronic components. Students work with a range of materials and manufacturing methods to complete their product to a high standard, using quality control measures and checks.They will also have an introduction to 3D Printing and its associated CAD software.	Students build on their prior knowledge of: Manufacturing - workshop skills and working to a tolerance to achieve accuracy. Electronics - Light Dependent Resistors		Students learn: To work with a range of resistant materials How to apply QC checks Input and Output devices. CAD software 3D Printing and its uses.			
3	Bionic Hand Students build a bionic hand made out of cardboard, strings, straws and rubber bands. They will relate the bionic hand to their own hand to understand the function of the fingers and the importance of the thumb, to grab or hold objects with different shapes and forms. Students will also learn that the development of bionic hands that can be remotely operated can help to complete tasks which would be difficult or tiring for a human.	This is an introduction to the wider application of D&T within the context of Science. This is also a transition project to prepare students for KS4 by using trial and error to develop and refine concept ideas. This will also feed into the next project; Compact Living. Students build on their prior knowledge of mechanisms from the Compact Living project and learn how levers/linkages enhance product functionality.		Students learn: That science and medicine use bionic prosthetics to substitute parts of the human body that are not working properly or are missing. Scientists use the human body as inspiration to build tools, such as hands and arms in hostile environments like space or the deep ocean. Explore, test and refine ideas building a simple machine (bionic hand) in a group.			Common good - problem-solve to improve quality of life.