Programmes of study for design technology Yr9 rotation

	Learning summary of each lesson
Lesson 1	**Introduction to the project** **Acrylic iPhone holder.** Describing shape and form using shading and rendering. Pupils will complete a worksheet related to realistic drawing in Technology
Lesson 2	**Research and material properties in Design Technology**. The difference between thermoplastics and thermoset plastics. Pupils to complete questions in workbook related to properties of plastics. Introduction to pattern and tessellation as a theme for the project.
Lesson 3	**Design brief and Initial ideas.** What is a design brief and why do we use them in design technology? Discuss the correct method of producing initial ideas: • 3D sketches • Colour • Annotation Pupils to complete 3 initial ideas with accompanying annotation related to ACCESSFM.
Lesson 4	**Modelling in Technology / using CADCAM** Why do we use models in Technology? The role of computer modelling and testing. How will CADCAM be used to produce the iPhone holder? Pupils will complete a detailed and realistic model of their design at 1:1 scale.
Lesson 5	**Workshop rules / Health and Safety** The importance of Health and Safety in the workshop. What kind of accidents could occur in the workshop? Understanding how to use the machines safely - guards, PPE, floor tape, emergency stops, correct clothing and emergency procedures. Workshop rules. Pupils will complete a worksheet about workshop safety and design a safety poster of their own. Distribute materials.
Lesson 6	**Practical Lesson–Measuring and marking** Materials distributed to pupils. Teacher demo on the correct way to mark and measure the material • Use of rulers – using mm • Using Tri squares • Indicating the waste. • How to mark properly on acrylic and similar materials. • Pupils to proceed with practical, show awareness of Health and Safety and follow the rules of the workshop.
Lesson 7	**Practical lesson** Continuation of practical lessons. Recap important health and Safety issues from last lesson and discuss good examples of work.
Lesson 8	**Practical Lesson- Cutting tools and techniques.** Teacher demo on the correct way to use cutting and shaping tools such as saws, drills, and files. • Correct techniques – how to begin a cut, sawing in a straight line, where to place hands • Common mistakes – using the tool incorrectly, using the wrong tool for the job • Correct methods of drilling – stepping up, work piece holding using hand vices and using correct technical terms. Pupils to proceed with practical, show awareness of Health and Safety and follow the rules of the workshop.
Lesson 9	**Practical lesson – CADCAM** Demo the acrylic line bender and CAD router machine. Reinforce health and safety rules when using the machines. Pupils to use both machines to produce an acrylic net with a tessellated pattern and then bend up the shape into a 3D object. • Follow correct procedure • Be aware of specific safety rules when using the machines • Be able to apply basic quality control checks after both processes are finished

	Pupils to proceed with practical, show awareness of Health and Safety and follow the rules of the workshop.
Lesson 10	**Practical lesson –Cleaning the materials/ Adding a finish** Pupils will clean up their materials using abrasive paper, wire wool and metal polish. Discussion about finishes: • Why are they used • Different types for different materials Pupils will discuss why acrylics do not need a finish. What is meant by self-finishing?
Lesson 11	**Practical – Final assembly** Final assembly lesson for all aspects of the project to be completed. Reminder about Quality Control – Modifications that may have occurred need to be noted and justified if they have deviated from the design brief.
Lesson 12	**Evaluation** Review the project with the pupils. Class discussion with all the completed projects on view. Good examples and why. What improvements could others have made? All pupils to complete an evaluation work sheet to review their product and their own performance during the rotation.
Lesson 13	**Electrical and Electronic systems – Glowing display project** Pupils will be introduced to the principles of Electrical and Electronic systems: • Simple circuits and components • Organising and representing electrical systems • Sensing circuits and feedback loops • Programmable components
Lesson 14	**Design brief and Initial ideas – Glowing display project** What is a design brief and why do we use them in design technology? Discuss the correct method of producing initial ideas: • 3D sketches • Colour • Annotation Pupils to complete 2 initial ideas with accompanying annotation.
Lesson 15	**Planning and making circuits** Pupils will learn: • How to plan, manufacture and populate their own electrical circuits • How to incorporate the use of sensing components to produce outputs such as sound and light.
Lesson 16	**Modelling in Technology / using CADCAM** Why do we use models in Technology? The role of computer modelling and testing. How will CADCAM be used to produce the Glowing display project

Lesson 17	**Practical lesson** Pupils will work towards practical realisation of their design ideas.
Lesson 18	**Practical lesson** Pupils will work towards practical realisation of their design ideas.
Lesson 19	**Practical lesson** Pupils will work towards practical realisation of their design ideas.
Lesson 20	**Evaluation** Review the project with the pupils. Class discussion with all the completed projects on view. Good examples and why. What improvements could others have made? All pupils to complete an evaluation work sheet to review their product.