

You should conduct an Independent research project on the work of Sir Alec Issigonis
Your project may take the form of a booklet, a powerpoint presentation, a stop frame animation or a film that you have created. choose which method you think you would be able to produce to the best quality given your available resources.

Your presentation should include:

- **Information regarding sir Alec Issigonis's background. (How did he get into design? Did he have a particularly interesting upbringing?) You may use the information to the right to help get you started, but you should look to find further information of your own.)**
- **A selection of the work that Sir Alec Issigonis is most well known for. (This should include at least 3 or 4 images, these could be photographs or your own drawings)**
- **Your own descriptions and opinions of the work that Sir Alec Issigonis has created. How does his work compare to other car design at a similar time? Why do you think his design was slightly different to other cars?**
- **Some design ideas (At least 4) for creating your own Car inspired by Sir Alec Issigonis. Your designs should be clear and using isometric projection where possible. You should fully annotate your designs to make them clear in how they have been influenced by Sir Alec Issigonis.**
- **A final design/ product on minimum of A4 paper (Preferably larger if available) which shows your design influenced by the work of Sir Alec Issigonis. Why do you think that this design is the best one? How have you been innovative in your designs?**
- **A sketchup CAD model of your final design (Using sketchup online is a free to use CAD modelling software) the more you can practise with this software the better as it will help you design future products successfully. * This step will only be possible if you have access to IT facilities and the internet. ***
- **A model of your design using recycled materials such as empty packaging containers, cardboard or plastercene. Focus on quality. How might you have changed this idea if you were able to use computer aided Manufacture?**

Sir Alec Issigonis



Sir Alexander Arnold Constantine Issigonis, best known as Alec Issigonis, is a car designer of Greek origins and the developer of the groundbreaking Mini.

He was born in Smyrna on November 18th, 1906. His father Constantine Issigonis and his grandfather were engineers. After the Minor Asia Disaster, his family was forced out of Smyrna and fled to Malta in 1922. After his father death, he relocated to England together with his mother.

His first car was a Singer with a Weymann coachwork, in which he travelled to Europe with his mother in 1925, dealing with an endless series of mechanical breakdowns.

After returning from that trip, Issigonis made the decision to study engineering at Battersea Polytechnic in London

Year 10 Design & Technology: Designing to respond to current events

Below there are 8 different design tasks. Each of them works towards finding a design based solution for a very real and current crisis that we are currently facing as a country. At this time, there are lots of designers and engineers pulling together to think of new ways to support the NHS in their mission to help as many people suffering from corona virus as possible. Can you use your creativity and design skills to respond to one (Or as many as you like) of the below contexts? Remember to send photos of written/drawn or digital work into your teacher so that we can share your excellent work on our school website, and give you the credit and feedback that you deserve.

(Mrs Gilbank: lgilbank@stgcc.co.uk Mr Kerslake: mkerslake@stgcc.co.uk)

- 1. Many people are living in isolation, this can be a lonely time for some. Design a way to make people feel connected. (This could take the form of an idea for an App, a social distancing game that can be played over the phone, a physical product or anything else that you can think of.)**
- 2. Covid-19 and other viruses are often spread through poor hygiene, design a way to encourage people to keep their hands clean. (This could be in the form of a physical product or in a graphic design based fashion)**
- 3. Many people are currently social distancing from others to stop the spread of Covid-19. Design a product to keep people at a distance when out and about.**
- 4. With sports clubs, gyms, swimming pools and other active areas now closed, Design a way for people to stay active indoors.**
- 5. The surgical face mask, although serves a purpose, doesn't go with many outfits. Re-design this mask for a client of your choice. It should be practical and functional as well as aesthetically pleasing.**
- 6. Hand washing is the best defense for the spread of germs. How can the process of hand washing be improved?**
- 7. If you are very ill and in bed, you often can't get up and move very far. Design a way to keep all the things you need close by when you are ill, e.g. water, tv, books, phone, tissues, medication etc.**
- 8. Pets are not used to having their humans around the house so much, some pets love it other pets hate it! Design a way to keep a pet entertained and distracted while the humans have to work.**

Mechanical Devices:



Changing magnitude and direction of force

Levers: (First order, second order, third order). Linkages (Bell cranks, push pull) Rotary systems: (CAMs and followers, simple gear trains, pulleys and belts). Students must be able to understand the action of forces and how levers and gears transmit and transform the effects of forces. Arithmetic and numerical computation eg use ratios. Use angular measures in degrees, visualise and represent 2D and 3D objects including 2D diagrams of mechanisms/ mechanical movement. Knowledge of the function of mechanical devices to produce different sorts of movement, changing the magnitude and direction of forces.

Different Types of movement

The functions of mechanical devices to produce linear, rotary, reciprocating, oscillating movements. Students must be able to visualise and represent 2D and 3D objects including diagrams of mechanisms/ mechanical movement.

Task: Complete the blank boxes below by researching the theme. Can you find any examples of mechanical devices and products which include a systems approach to design in your own house? **CHALLENGE:** Can you design a product which includes a mechanical system or uses a systems approach to design?

Examples: Drawn diagrams to show the working of mechanisms and mechanical movement

Systems approach to Designing:



Inputs

The use of light sensors, temperature sensors, pressure sensors and switches. Extracting information from technical specifications. Component names interaction and operation.

Processes

The use or programming microcontrollers as counters, timers and for decision making to provide functionality to products and processes.. Extracting information from technical specifications. Component names, interaction and operation

Outputs

The use of buzzers, speakers and lamps to provide functionality to products and processes. Extracting information from technical specifications. Component names, interaction and operation

Examples: How are these used and where?

Task: Complete the blank boxes below by researching the theme. Can you find any examples of developments in new and emerging technologies and the materials mentioned below in your own house? CHALLENGE: Can you design a product which uses a new or emerging technology?

New and Emerging Technologies

Examples: Where does this happen?

Industry and enterprise	The design and organisation of the workplace including automation and the use of robots. Buildings and the place of work. Tools and equipment. Crowd funding, virtual marketing and retail, co-operatives, Fair trade
People/ Culture/ Society	How technology push/market pull affects choice. Changing job roles due to the emergence of new ways of working driven by technological change. Changes in fashion and trends in relation to new and emergent technologies. Respecting people of different faiths and beliefs.. How products are designed and made to avoid having a negative impact on others. Design for disabled, elderly different religious groups.
Sustainability	The impact of resource consumption on the planet: Finite, non-finite & disposal of waste
Production techniques and systems	The contemporary and potential future use of: Automation, computer aided design, computer aided manufacture, flexible manufacturing systems, Just in time, lean manufacturing.
Environment	Positive and negative impacts new products have on the environment: Continuous improvement, efficient working, pollution, global warming.
The effects of new technologies on design decisions	That it is important to consider scenarios from different perspectives and considering: Planned Obsolescence , design for maintenance, ethics, the environment, ethical factors and consideration of ecological and social footprint.

Materials and their working properties:



Example products:

Metals and alloys	Ferrous metals including: (Low carbon steel, cast iron, high carbon/tool steel), non ferrous metals including: (Aluminium, copper, tin, zinc) Alloys including: (Brass, stainless steel, high speel steel)
Papers and boards	Papers including: (Bleed proof paper, cartridge paper, grid paper, layout paper, tracing paper) Boards including: Corrugated card, duplex board, foil lined board, foam core board, ink jet card, solid white board.)
Polymers	Thermoforming including: Acrylic (PMMA), high impact polystyrene (HIPS), High density polypropylene (HDPE), polypropylene (PP), polyvinyl chloride (PVC) Polyethylene terephthalate (PET) Thermosetting including: Epoxy resin (ER) Melamine- formaldehyde (MF), phenol formaldehyde (PF) polyester resin (PR) Urea-formaldehyde (UF)
Natural and manufactured timbers	Hardwoods including: (ash, beech, mahogany, oak, balsa), Softwoods including: (Larch, pine, spruce), Manufactured boards including: M(edium Density fibreboard (MDF), plywood, chipboard)
Textiles	Natural fibres including: (cotton, wool, silk), synthetic fibres including: (Polyester, polyamide (Nylon), elastane (Lycra), Blended and mixed fibres including: Cotton/polyester, woven including (plain weave), non wven including: (Bonded fabrics, felted fabrics Knitted textiles including (Knitted fabrics).
