ENGINEERING

Sir Stanley Matthews Academy

YEAR 11

EXAM RE-SIT
Component 3 – A 2 part exam – one engineering experiment and one analyse and re-design of an engineer product
2 attempts at this exam with the best resulting counting

Manufacture & Evaluate: Turning the designs into reality – and making use of the cutting edge CAM equipment in the department – a final review will conclude this unit.

DESK TIDY
Component 1b – A journey through the design process – researching, designing , making and evaluating a desk tidy

Design: Completing a range of 2D and 3D sketches, Technical drawings and CAD final designs is mirroring exactly what goes on within all areas of engineering.

FΩrmµlαt∑ It: This exam will draw on a range of STEM (Science, Technology, Engineering and Maths) skills

Research: Finding out what already exists and looking to better these ideas is an ideal starting point to explore

EXAM
Component 3 – A 2 part exam – one engineering experiment and one analyse and re-design of an engineer product

Part 1: You will learn how to carry out an investigation, gather results, plot graphs, record observations and evaluate the real world engineering problem you are solving.

EXAM REVISION

FΩrmµlαt∑ ItENGINEERING

Part 2: You will learn how to effectively analyse an existing product and re-design this- applying materials and manufacturing knowledge gathered to date.

Research: What is engineering? and what skills are required to be a successful?

Design: How do engineers come up with ideas? How are these developed and presented in industry? How do you know you have created the best idea?

Manufacture: Working from an engineering drawing to manufacture a ulti material based product

Evaluation: Did you achieve everything that was set out? Were there any set back? And if so, how did you overcome these?

MAKERS CLAMP
Component 2 – Manufacture of an engineered product – focus: Materials, Equipment / Processes/ H & S

Research: Materials & Manufacturing based research, focusing on properties, processes, material choice and alternatives available

Materials / Make: Manufacture of the makers clamp product – using woods, metals and plastics – carry out quality assurance, investigating health and safety procedures

ENGINEERING SECTORS
Component 1a –Research into engineering sectors, companies, job roles and their responsibilities

Industry based Research What does the world of engineering really look like? What companies are involved? And what do job roles look like?

YEAR 10

CLIENT BASED DESIGN
Introduction to the course – what is engineering? A speaker project to introduce you to the design process, manufacturing and key sills and knowledge

Make: Use a wide range of skills, materials and processes to develop a range of prototypes relating to the initial design brief/client wishes.

Design: Focus your idea on a design context, generate own design brief and identify a real-world client.

ITERATIVE DESIGN

Make: Develop your design through iterative processes and modelling, testing & evaluating before making a final product.

Design: Using removal techniques to develop an organic shaped product based on nature & biomimicry.

RECYCLED PRODUCTS
Learners are given old products and asked to re-purpose and create a new product

Make: Addition processes & joining systems. Using skills to develop high quality craftsmanship products.

Design: Practicing Isometric Projection and rendering skills. Orthographic projection.

Materials: Working with a range of DT materials to generate a range of mini makes. Working properties and recognizing materials.

MINITURE MAKES
Generating a range of small mini projects, culminating in learners choosing their specific material area

KS4

YEAR 9

Client context: What is the design problem? How do they currently solve it? What needs to be developed further?

Design: Isometric projection, CAD development

Testing / Modelling: Will my product work? What can I do to improve it?

Make: Can you make an accurate product using machines and tools independently?

Evaluate: What skills have you developed? Test your product and consider how you would improve it.

Design brief: What is the clients need? How can we solve this issue creatively?

DESIGN SOLUTION

Evaluate: At each stage of making, how can you improve your product? Would you change any thing?

Make: Develop independence in CAD using 2D design software to make complex design ideas. Manufacture a range of items that link to the design brief and client

Design: Designing for a user and client. What is an isometric projection? Develop design ideas using CAD and other design systems.

Materials: Working with timber, boards, acrylics and textile to develop a sensory garden item.

SENSORY PROJECT

After choosing options in year 8, focus your studies in GCSE DT in years 9 -11, through exciting, real life projects. Deepen your understanding of DT in the world around us whilst developing products that help various needs and users.

Key skills
- Generating products that solve real world issues
- Independence in generating and completion of design projects

YEAR 8

Make: Choosing a specific designer, manufacture a miniature model of one of their famous products

Evaluate: Does your product work? How can you fix problems?

Materials: Working with acrylics timber and textile, cutting and finishing techniques.

Design: CAD What is computer aided design? Learn to use the basics of 2D software to design products- generation of acrylic components

Make: Manufacture of storage systems that uses CAD, textile, acrylics, timbers

Evaluate: How has CAD / CAM helped you make a product? How can my manufacturing be improved?

Design: Designing with restrictions Orthographic Projection & Rendering

CULTURAL DESIGN

Designers What famous designers work has had a world wide impact? How do design trends impact us?

DESIGNER APPRECIATION

Work in more depth on projects, honing your practical skills (across all materials disciplines), improving your resilience & problem solving whilst developing independence in the workshop.

Key skills
- Generating own design brief
- Writing a specification
- Production planning
- Iterative design

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YEAR 7

Evaluate: What makes a good picture frame? How can you improve your skills?

Make: Generation of a range of poppies using textiles, polymers, paper and board and potentially woods

Design: Designing for users, generation of a whole school sculpture for Y7 poppies

Materials: Textiles, Polymer, Paper classification. Where do these materials come from?

POPPY Project (textiles, polymers and paper)

Baseline Assessment: What do you already know about DT?

Introduction to the workshop: Health and Safety

KS3

Experience a wide range of fun and exciting projects that teach you valuable skills in the workshop, understanding different materials and how they work.

Key skills
- Understanding project needs from a design brief
- Designing products based upon a specification
- Evaluating and developing design ideas