


DESIGN AND TECHNOLOGY - Engineering

[LINK – To lesson resources](#)

YEAR 11 – Engineering Design (KS4)																																								
INTENT:													The bigger picture:													Character & Culture														
<p>To play a part in... developing the vocational skills, knowledge and understanding needed to be successful in the Engineering Design Course and thereafter.</p> <p>Students are to... apply knowledge over the course of key stage 4, completing the J822 – OCR Cambridge National syllabus.</p>													<p>This scheme plays an important role within the <u>vocational options</u> offered by the school. The course offers a 60:40 split from Coursework to Exam, with 2 coursework projects one focussing on designing and the other making. The exam is an hour and a half paper, encompassing 1 mark (Multiple choice) to 6-mark questions.</p> <p>The Next Step: This course prepares students for possible future learning, apprenticeships and jobs in the Engineering Design field. At Bilton we offer Art and Design with a Product Design specialism at post-16.</p>													 <p>Character & Culture Character and Culture is embedded within the curriculum map and coded as shown.</p> <p>Society Design and Technology can lead to many careers in society. An example of this is within the STEAM routes.</p> <p>* Link to C&C</p>														
Week:	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39		
Retrieval Task:	Analysis	QFD	Hazards	Safety	Photo diary	Tools QA	Risk	Planning	Disassembly	PPE	Evaluation	Improve	CAD	Analysis	Make	Exam Q	Exam Q	Exam Q	Exam Q	Exam Q	Exam Q	Exam Q	Exam Q	Exam Q	Exam Q	Exam Q	Exam Q	Remember	Improve	Evaluate	Analyse									
Objective: I do, we do, you do...	R040 - Task 1 - 1.1b – Product Analysis – Finish Off	R040 – Task 1 - 1.1 – QFD – Quality Function	R040 - Task 2 – 1.2 – MAKE	R040 – Task 4 – 2.1.2 – Make Product – make circuit	R040 – Task 4 – 2.1.2 – Finish off make – risk assess	R040 – Task 5 – 2.1.2 – Planning and photo diary	R040 – Task 5 – 2.1.2 – Potential hazards	R040 – Task 5 – 2.1.2 – safety requirements	R040 – Task 2 - 1.2 – Passive speaker disassembly	R040 – Task 2 – 1.2 – Analysis, Tools, PPE, Photo diary	R040 – Task 6 – 2.1.2 – Evaluation ACCESSFM	R040 – Task 6 – 2.1.2 – Improvements – drawing	R040 – Finish off Task 3 - CAD	R040 – Finish Off Task 2 – Analysis - Planning	R040 – Finish off Task 4 and Task 5 – Making	R040 – Deadline for Exam board	R038 – THEORY 1	R038 – THEORY 2	R038 – THEORY 3	R038 – THEORY 4	R038 – THEORY 5	R038 – THEORY 6	R040 – Exam board Feedback R038 – THEORY 7	R038 – THEORY 8	R038 – THEORY 9	R038 – THEORY 10	R038 – THEORY 11	R038 – THEORY 12 – EXAM (May 15th)	Improve R040 – 4 Lessons	Improve R040	R040 - Resubmission	Revision for exams	Revision for exams	Study leave	Study Leave	Study Leave	Study leave	Study leave	Study leave	
Silent Study:	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
Assessment:																																								
Homework:																																								
Assessment Plan:	Assessment follows the OCR guidance. Deadlines are set on Class-charts, work is handed in via email & group feedback is given. The exam board give group feedback, then students can resubmit with improvements. Frequency: Within each half term there are approx. 2 homework's and 2 assessments.																																							
Literacy:	2 for 2 and 3 for 3 – Within the unit of work teachers use educational and subject specific key literacy. Key Vocab CAD, CAM, Planning, manufacture, evaluation, analysis, disassemble, state, discuss, explain, describe, evaluate, judge. ACCESSFM, Safety, health, PPE, hazards, risk, danger, accurate, 3 rd angle orthographic, exploded view, dimensions, isometric, explode, vectorise, component. Words and key pictures – Each unit of work has a handout including all key terms, words, tools and materials.																																							
Cultural Capital:	Regional Engineering Heritage: Exploring the contributions of the West Midlands to engineering, particularly in automotive and manufacturing sectors, equips students with essential historical and technical knowledge, aligning with the goal of expanding students' understanding beyond their everyday experiences. (Engineering is taught through CAD, RM, Electronics and is offered at KS4 as a popular route for our students in the context of the area and a shortage in Engineering jobs)																																							
Connected Knowledge:	This is a unit designed to... prepare students for the future of design and technology at Bilton School as having CAD/CAM skills is a priority and plays a big part of the future curriculum. Following this it supports the journey into KS4 and 6th form Art and Design. Across the school this supports the Art, ICT and Business departments as these skills are transferable and are beneficial in the curriculum plan. Beyond school , the world of work is becoming more increasingly automated, and we are in an area of the country with a huge amount of engineering companies and potential future jobs. CAD/CAM is a perfect steppingstone to further education, apprenticeships and university.																																							
IMPACT:	Students measure progress using the teachers shared mark book and SIMS . Students work is moderated through department meeting times and then submitted to the exam board, then a sample is selected and work is then annotated on the exam board assessment forms. This shows progress over time and prepares students for future learning at Bilton School and beyond.																																							



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Society
Design and Technology can lead to many careers in society. An example of this is within the **STEAM** routes.

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- CROSS CURRICULAR LINKS:**
- MUSIC** - You design a product from a brief & adapt to meet consumer needs. - Term 4
 - IT** - You have an individualised design task, following the design process – Terms 4,5 & 6
 - ART** - You learn about shading, rendering and tone. – Term 1

- LESSON STRUCTURE:**
- ALL lessons will use the whole school strategy I DO, WE DO, YOU DO
 - ALL lessons will have a retrieval task that engages learners immediately after arrival. In practical settings this may not use a PowerPoint.
 - All lessons will have a period of SILENT STUDY.
 - All lessons will have Learning objectives visible.

- (TOPIC SHEET INFORMATION)
- WHAT SKILLS WILL BE DEVELOPED:**
- You will develop techniques in generation, concept development and the communication of design ideas using hand rendering and computer-based presentation techniques.

- WHY WE ARE LEARNING THIS:**
- You will generate design ideas using a mixture of techniques including drawing by hand and computer aided design.
 - You will gain skills in annotation and labelling techniques, such as showing key features, functions, dimensions, materials and construction methods.
 - You will produce a prototype product in the form of a model and test your idea in a practical context.

- HOW TO BECOME AN EXPERT IN THIS TOPIC:**
- Watch this YouTube clip to stretch yourself - **Top 10 Career options after Engineering.**
 - Read and use the **R040 Assessment Guides** to support your learning.