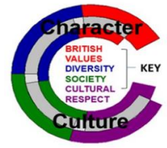
DESIGN AND TECHNOLOGY

LINK – To lesson resources

YEAR 10 – Engineering Design (KS4)

INTENT:
To play a part in… developing the vocational skills, knowledge and understanding needed to be successful in the Engineering Design Course and thereafter.
Students are to… apply knowledge over the course of key stage 4, completing the J822 – OCR Cambridge National syllabus.

The bigger picture:
This scheme plays an important role within the vocational options 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.
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.



* Link to C&C

Character & Culture
Character and Culture is embedded within the curriculum map and coded as shown.

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

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
	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:	Dimension	Rendered	Annotation	ACCESSFM	Develop	Evolve	3rd Ortho	Exploded	Component	Rendered	2D Demo	3D Demo	2D Demo	Evaluate	Mark Scheme	Improve		Risk	Safety	Photo diary	Evaluate	Planning	Assess	Mark scheme	Mark scheme	Mark Scheme	Mark Scheme	IDOV	ACCESSFM	Ergonomics	Anthropometric	Materials	Processes	Project Brief	Orthographic	3D Demo	3D Demo	3D Demo	Theory Booklet
Objective: I do, we do, you do…	R039 – 2D and 3D sketches /12	R039	R039 – Detailed labelling and annotation /6	R039	Ro39 – Decide Development /12	R039	R039 – Engineering Drawings - /12	R039	R039 – Engineering Drtawiings	R039	R039 – Computer Aided Design /18	R039	R039	R039	R039	R039	R039 – Submission Deadline (EXAMBOARD)	R040 – Portable Clock manufacture practice - 1	R040 – Portable Clock manufacture practice - 2	R040 – Portable Clock manufacture practice - 3	R040 – Portable Clock manufacture practice - 4	Finish off clock – save photos for future use	R039 – Exam board Feedback	R039 – Improvements 1	R039 – Improvements 2	R039 – Improvements 3	R039 – Improvements 4	R039 – THEORY 1	R039 – THEORY 2	R039 – THEORY 3	R039 - Resubmission	THEORY 4	THEORY 5	R040 – Brief Released *	CAD – I -Task 3 (2-1) – 3rd angle orthographic	CAD -2 I -Task 3 (2-1) – 3rd angle orthographic	CAD - 3 I -Task 3 (2-1) – isometric components	CAD -4 I -Task 3 (2-1) – Isometric exploded	CAD - 5 I -Task 3 (2-1) – Isometric 3D Rendered.
Silent Study:	B	M	E	B	M	E	B	B	M	E	B	M	E	B	M	E	B	B	E	E	E	M	M	E	E	B	E	M	M	E	E	E	B	M	E	B	M	E	M
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 3 for 3	**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, 3rd 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.
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.

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 **R107 Assessment Guides** to support your learning.
- Practice designing at home using the Bilton School login to **Techsoft - 2D Design**

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