Engineering Design

Curriculum Map:

KS4 DT, Food, Engineering

Key Stage 4

Subject	**Engineering Design**
Qualification	Cambridge Nationals
Exam Board	OCR
Course Leader	Miss C Lee
Course summary	Engineering Design will encourage students to: • understand and apply the fundamental principles and concepts of Engineering Design, including the design process, types of drawings, influences on design, and the use of Computer Aided Design (CAD) • develop learning and practical skills that can be applied to real-life contexts and work situations • think creatively, innovatively, analytically, logically and critically • develop independence and confidence in using skills that would be relevant to the engineering design and development sector and more widely • analyse problems in design terms through practical experience of solving such problems, including designing, and modelling designs to meet a design • brief • understand the different stages of the iterative design process, recognising the cyclical nature of this approach • evaluate designs through product disassembly and the process of using product analysis.
What will students learn?	You will study the key aspects of engineering design, and have the opportunity to apply what you learn through a number of practical experiences. This will involve you studying three mandatory units: **R038: Principles of engineering design** This is assessed by an exam. In this unit you will learn about the design process, and all of the stages that are involved. Topics include: o Designing processes o Designing requirements o Communicating design outcomes o Evaluating design ideas **R039: Communicating designs** This is assessed by a set assignment. In this unit you will learn how to use sketching and engineering drawings to communicate your ideas. Topics include: o Manual production of freehand sketches o Manual production of engineering drawings

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<tr><td></td><td>o Use of computer aided design (CAD)

R040: Design, evaluation and modelling
This is assessed by a set assignment. In this unit you will learn virtual and physical modelling skills. Topics include:
o Product evaluation
o Modelling a prototype</td></tr>
<tr><td>How will students be assessed?</td><td>
<table>
<tr><th>Unit</th><th>Marks</th><th>Duration</th></tr>
<tr><td>R038: Principles of engineering design</td><td>70</td><td>1 hour 15 mins</td></tr>
<tr><td colspan="3">Written paper, OCR set and marked</td></tr>
<tr><td>R039: Communicating designs</td><td>60</td><td>Approx. 10-12 hours</td></tr>
<tr><td colspan="3">Centre-assessed tasks, OCR moderated</td></tr>
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