

PCHS Curriculum Information

Course Title: OCR Level 1/2 Cambridge National in Engineering Design	Exam Board: Cambridge National L1/2	Specification Code: J822
How will students be assessed? Examination - Externally assessed exam paper Unit name :Principles in engineering design R038 Students will sit a one-hour 15 minute examination at the end of Year 11. This is worth 40% of overall marks for the qualification. There will be no opportunity to resit the exam None examined unit (NEA) - All units are assessed internally then moderated by the exam board Unit R039: Communicating Designs Unit R040: Design evaluation and modelling Each unit is worth 30% of overall marks for the qualification.		

KEY CONTENT

Half Term 1 & 2 & 3

Unit R039: Communicating Designs

Students will complete this unit of work in this term. It will then be assessed and sent off for external moderation in January of this same academic year.

Learners will be taught:

- 2D/3D sketches
- Thick/thin lines
- Texture
- Tone
- Shading

- Annotation and labeling techniques:
- Isometric projection
- Center line
- Parts list to include up to 4 parts
- Parts number referencing
- Assembly instructions
- CAD sketch tool features
- CAD reference geometry:
- CAD rendering

Task 1 - Students will undertake an exam board set design task to demonstrate the skills that they have learnt

Half Term 4 & 5

Unit R039: Communicating Designs will be assessed by PCHS staff and submitted for external moderation in January

Unit name :Principles in engineering design R038

Topic Area 1

1.1 The stages involved in design strategies

- Linear design
- Iterative design
- Inclusive design
- User-centered design
- Sustainable design
- Ergonomic design

1.2 Stages of the iterative design process, and the activities carried out within each stage of this cyclic approach

- Analysis of the design brief
- Methods of researching the product requirements
- ACCESS FM (Aesthetics, Cost, Customer, Environment, Size, Safety, Function, Materials and Manufacturing)
- Product disassembly
- Production of an engineering design specification
- Generation of design ideas by sketching and modelling

1.2.2 Make and evaluate:

- The reasons for the use of modelling
- Physical modelling of the design idea
- Manufacture or modification of the prototype

Half Term 6

R040 Design, evaluation and modelling Product Analysis

Learners will be taught how to

- carry out a comprehensive product analysis of the key features of 'set task' e.g. LED desk lamps.
- identify the strengths and weaknesses within existing products set task' e.g LED desk lamps.
- compare 'set task' product using a customer-driven engineering matrix.
- Student work presented in a report which will be used to inform further designs of 'set task