Y10 R039 starts.

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

Y10 R039 starts.

Half Term 1 & 2

Unit R039: Communicating Designs

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

Learners will be taught:

- 2D/3D sketches
- Thick/thin lines
- Texture
- Tone
- Shading
- Annotation and labelling techniques:
- Isometric projection
- Centre 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&2 - Students will undertake topic area 1: Freehand sketches, annotation and design development.

They will then be introduced to Task 3 and 4: Production of Engineering drawings and CAD models.

Half term 3 & 4

Task 3&4 continued- Students will complete the CAD work and prepare their assignment for assessment.

Half Term 5

Completion of assignments, to be submitted May of same academic year

Unit name :Principles in engineering design R038

Topic Area 1

1.1 The stages involved in design strategies

- Linear design

Y10 R039 starts.

- Iterative design
- Inclusive design
- User-centred 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

Y10 Mock exam June

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

Learners will complete Task 1: Product Analysis