A LEVEL DESIGN ENGINEERING

FORTITUDINE CRESCAMUS

Awarding Body: OCR (Course code H404)

Examinations:

Principles of Design Engineering – 1 hour 30 minute written paper
Problem Solving in Design Engineering – 1 hour 45 minute written paper 50% final mark
Non-Exam Assessment: Iterative Design Project 50% final mark

Course content

Studying Design Engineering at Newstead Wood School provides students with a framework for analysing existing products/systems that enables them to make considered selection of appropriate materials, components, systems, and manufacturing processes when designing. A-Level students are required to undertake the following three components:

Principles of Design Engineering

This paper is set out through four sets of questions that predominantly cover technical principles within Design Engineering. Learners will be required to:

- Analyse existing products.
- Demonstrate applied mathematical skills.
- Demonstrate their technical knowledge of materials, product functionality, manufacturing processes and techniques.
- Demonstrate their understanding of wider social, moral, and environmental issues that impact on the design and manufacturing industries.

Problem Solving in Design Engineering

This component has a series of longer answer questions that require students to demonstrate their problem solving and critical evaluation skills. Students are required to:

- Apply their knowledge, understanding and skills of designing and manufacturing prototypes and products.
- Demonstrate their higher thinking skills to solve problems and evaluate situations and suitability of design solutions.

Iterative Design Project

The 'Iterative Design Project' requires students to undertake a substantial project centred on the iterative process of explore, create, and evaluate. Pupils will be tasked with finding a relevant design problem with a range of stakeholders. Researching, designing, modelling, and testing ideas to iterate a design solution which they prototype, test and evaluate. Students identify a design opportunity or problem from a context of their own choice and create a portfolio of evidence in real time through the project to demonstrate their competence.

Entry requirements

Grade 7, 8 or 9 at Design & Technology/Engineering GCSE

Future opportunities

In Year 12 students can apply for a place on the Engineering Education Scheme, which provides the opportunity for participants to work with practicing engineers on real world projects through links with a sponsoring organisation and attend workshops at the University of Kent, Canterbury. Those students on the scheme can apply for the Gold CREST Award. There is a planned trip to Imperial College, London for the destructive and non-destructive testing of materials as part of their OCR Design Engineering course.

Further information: Students have gone on to study Engineering related courses at the following universities: Imperial College, London; Loughborough; Nottingham; Sheffield