



OVERVIEW

The Engineering course prepares students for a career in engineering, it provides in depth knowledge of nine sectors and the careers available in all these areas. Students will develop an understanding of how to manufacture products from orthographic drawing, through manufacture to evaluation, using a range of media and materials, from hand tools to CAD, metal to ceramics.

The synoptic brief is released early September, students will have all knowledge needed prior to participation, but there are teaching opportunities available as an introduction/recap to each section of the synoptic project.

Autumn

Synoptic Project released by NCFE

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| <ol style="list-style-type: none"> 1. Properties of materials – chemical, electrical, 2. Properties of materials – mechanical, optical, thermal. 3. Properties of materials – optical, thermal. 4. Environmental impact 5. Sustainability, renewable materials, and carbon footprint. 6. Metals 7. Polymers 8. Wood 9. Ceramics 10. Composites 11. Analysis of the project brief 12. Materials research 1 13. Materials research 2 | <ol style="list-style-type: none"> 1. Engineered drawing recap progression task – materials research 2. Engineered drawing 1 3. Engineered drawing 2 4. Engineered drawing 3 5. CAD drawings 1 progression task – engineered drawings 6. CAD drawings 2 7. CAD drawings 3 8. CAD drawings 4 9. Production plan – recap/ preparation- progression task – CAD drawings 10. Production plan 1 11. Production plan 2 12. Production plan 3 13. Production plan 4 |
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Assessment:

Teacher assessment – Students will be assessed in each of the sections shown on the left and marked according to the exam board criteria shown below:

- AO1 Recall knowledge and show understanding
- AO2 Apply knowledge and understanding
- AO3 Analyse and evaluate knowledge and understanding
- AO4 Demonstrate and apply technical skills and processes
- AO5 Manage and evaluate the project

Spring

Exam preparation

1. Prototype preparation **progression task – production planning**
 2. Prototype – manufacture 1
 3. Prototype – manufacture 2
 4. Prototype – manufacture 3
 5. Prototype – manufacture 4
 6. Prototype – manufacture 5
 7. Prototype – manufacture 6
 8. Evaluation 1 **progression task – prototype manufacture**
 9. Evaluation 2
 10. Unit 1 revisit – Engineering sectors
 11. Unit 2 revisit – SI units – applications of equations - **progression task engineering sectors**
 12. Unit 3 revisit – Drawing conventions and BS8888 - **progression task SI units**
 13. Unit 4 revisit - Properties and characteristics of materials – properties
 14. Unit 4 revisit - Properties and characteristics of materials – characteristics
 15. Unit 4 revisit - Properties and characteristics of materials – metals- **progression task properties and characteristics**
- All practice exam papers will be either marked in class as self-assessment, by teacher as a full marking or as a progression task with sampled marking.

Assessment:

For each unit revisited there will be an end of unit test, these will be marked using exam board marking criteria.

All practice exam papers will be either marked in class as self-assessment, by teacher as a full marking or as a progression task with sampled marking.

Summer

External exam will take place during the summer exam series.

Useful resources for supporting your child at home:

Excellent design sketching tutorials:

[product designer maker - YouTube](#)

Student access to Focus eLearning – direct link given to students.

Homework:

Homework will be set fortnightly; students will have a digital Unit book which they will respond to research and questions online.