

**WMG**

Academy for Young



**engineers**

**Coventry**

# **YEAR 12 CURRICULUM BOOKLET**

**2025 - 2027**



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## INTRODUCTION

We look forward to welcoming you to the WMG Academy for Young Engineers. As you begin your Post 16 studies you will be developing new skills, knowledge and exploring the world of engineering through your programmes.

Please read carefully through all of the information about the courses that will be on offer in September along with the support and guidance programme. This will help you to make a final decision on your programme of study with us. We will guide you to a programme which takes into consideration your future career aspirations and interests.

We offer a student-led curriculum based on the options students select or opt for each year and we reserve the right not to run courses which are not viable due to low numbers of staffing capacity. However, we do our utmost to accommodate all requests and combinations of subjects.

Choosing your Post 16 programme of study is an important decision. We recommend that you carry out research into your choice of potential careers, talk to your parents/carers and contact universities and companies about the entry requirements for specific courses and apprenticeships to ensure that you are as informed as possible before making your final decisions.

Alongside your programme of study, all Year 12 learners will participate in a pastoral and enrichment programme which incorporates numerous opportunities for employer and university engagement and first class careers and destinations guidance.

Please note, that, in line with Government regulations, any Post 16 student who has not achieved a grade 4 in Maths or English will be expected to re-sit this during their time at WMG Academy until they have achieved this level.

# T-LEVEL TECHNICAL QUALIFICATION IN ENGINEERING, MANUFACTURING, PROCESSING AND CONTROL

## Equivalent to 3 qualifications

Awarding Body: City & Guilds

Course Code: 8730 / 8713

QAN: 610/0971/4 - [Click here for more information](#)

## OVERVIEW OF THE COURSE

T-Levels are new courses which will follow on after GCSEs and are equivalent to three A Levels. These two-year courses have been developed in collaboration with employers and businesses so that the content meets the needs of industry and prepares learners for the world of work.

The qualification will help you gain an understanding of the engineering industry and the sector, and you will cover topics such as: processes of production and manufacturing, materials used in production, manufacturing, and fabrication environments, specialist machinery utilised in the production and manufacturing environments, product and project management and quality assurance and quality control. A learner will also complete one standalone occupational specialism: Fitting and assembly technologies.

WMG Academy will work with local employers to provide a 45 Day industry placement to be completed by the student. The employer will contribute to the knowledge and delivery of training whilst providing demonstrations and talks on the industry to enhance the students' understanding of the industry sector.

## CONTENT AND ASSESSMENT

### Technical qualification scheme of assessment overview

**Core Component – Learners must complete all assessment components**

Assessment component	Method	Duration	Marks	Weighting	Marking	Grading
Exam paper 1	Externally set exam	2.5 hours	100	35%	Externally marked	This component will be awarded on the grade scale A* - E
Exam paper 2	Externally set exam	2.5 hours	100	35%	Externally marked	
Employer-set project	Externally set project	15.5 hours	90	30%	Externally marked	

**Occupational Specialism Component - Learners must complete one assessment component**

Assessment component	Method	Duration	Marks	Weighting	Marking	Grading
Fitting and assembly technologies	Externally set assignment	25 hours 15 minutes	90	100%	Externally moderated	

## ENTRY REQUIREMENTS

At least five GCSEs at Grade 5 and above which include English and Maths at Grade 5, and Grade 5-5 in Combined Science or Grade 5 in Physics.

## APPLIED SCIENCE - BTEC EXTENDED DIPLOMA

(Equivalent to 3 A-Levels)

Awarding Body: Pearson

Course Code:

QAN: 601/7437/7

### OVERVIEW OF THE COURSE

This BTEC Science course aims to give students a solid foundation in all three sciences, extending their knowledge from GCSE and providing them with the practical skills needed to progress in a career in science or engineering, both in employment and in Higher Education. This course is designed for students who want to continue with science, but for whom A-Levels are not the chosen pathway. This course is made up of 4, 8 or 13 modules, depending on whether students are entering for the single, double or triple A-Level equivalent. Around 25% of the course is exam assessed, while the remaining units are coursework assessed.

### CONTENT AND ASSESSMENT

The following units are mandatory units:

- 1. Principles and Applications of Science** - Externally assessed exam.
- 2. Practical Scientific Procedures and Techniques.**
- 3. Science Investigation Skills** - Controlled assessment.
- 4. Laboratory Techniques and their Application**
- 5. Principles and Applications of Science II** - Externally assessed exam.
- 6. Investigative Project**
- 7. Contemporary Issues in Science** - Externally assessed exam.

In addition to those above, optional units will also be completed in order to bring up the total number of units needed for the chosen qualification.

### ENTRY REQUIREMENTS

Students should be aiming to achieve a grade 55 in combined science.

## APPLIED SCIENCE - CAMBRIDGE ADVANCED NATIONAL (Extended Certificate)

OCR Level 3 Alternative Academic Qualification Cambridge

### Equivalent to 1 qualifications

Awarding Body: OCR

Course Code: H151

QAN: 610/3948/2 - [Click here for more information](#)

### OVERVIEW OF THE COURSE

This Alternative Academic Qualification course aims to give students a solid foundation in all three sciences, extending their knowledge from GCSE and providing them with the practical skills needed to progress in a career in science, both in employment and in Higher Education. This course is designed for students who want to continue with science, but for whom A-Levels are not the chosen pathway. This course is made up of 5 units, 3 are mandatory units and 2 are optional units. The qualification is made up of 40% examined content and 60% non examined assessment (NEA) content. This approach supports you to develop both theoretical knowledge and understanding and the skills needed to apply it in a range of contexts, helping you to develop a broad and relevant set of skills and experiences.

### CONTENT AND ASSESSMENT

The following units are mandatory units:

- 1. F180: Fundamentals of science** - Externally assessed exam.
- 2. F181: Science in society** - Externally assessed exam.
- 3. F182: Investigating science** - Controlled assessment.

In addition to those above, 2 optional units will also be completed in order to bring up the total number of units needed for the single qualification.

### ENTRY REQUIREMENTS

Students should be aiming to achieve a grade 44 in combined science.

## ENGINEERING - CAMBRIDGE ADVANCED NATIONAL (Extended Certificate)

(Equivalent to 1 A-Level)

Awarding Body: OCR

Course Code: H127

QAN: 610/3944/5 - [Click here for more information](#)

### OVERVIEW OF THE COURSE

This qualification is designed for students aged 16-19 wishing to gain an understanding of the engineering sector and who wish to study Engineering alongside other A-Levels or vocational qualifications. Our Extended Certificate in Engineering will equip students with relevant sector knowledge and skills using practical, real-life engineering contexts in preparation for progression to undergraduate study. It covers the modelling of products, computer-aided design (CAD) and product redesign.

### CONTENT AND ASSESSMENT

OCR Level 3 Alternative Academic Qualification Cambridge Advanced National in Engineering (Extended Certificate) For this qualification, students must complete five units:

- Two mandatory externally assessed units
- One mandatory NEA units
- Two optional units

**F130** - Principles of Engineering - Exam

**F131** - Materials science and technology - Exam

**F132** - Engineering in practice (practical set assignment) - Internally assessed

#### Then two optional units

**F133** - Computer Aided Design (CAD) - Internally assessed

**F135** - Mechanical product design - Internally assessed

### ENTRY REQUIREMENTS

Grade 6 or above in GCSE Mathematics.

## HUMAN BIOLOGY - CAMBRIDGE ADVANCED NATIONAL (Extended Certificate)

(Equivalent to 1 A-Level)

Awarding Body: OCR

Course Code: H149

QAN: 610/3946/9 - [Click here for more information](#)

### OVERVIEW OF THE COURSE

This Alternative Academic Qualification course aims to give students a solid foundation in all three sciences, extending their knowledge from GCSE and providing them with the practical skills needed to progress in a career in biology or medical science, both in employment and in Higher Education. This course is designed for students who want to continue with biology, but for whom A-Levels are not the chosen pathway. This course is made up of 6 units, 4 are mandatory units and 2 are optional units. The qualification is made up of 40% examined content and 60% non examined assessment (NEA) content. This approach supports you to develop both theoretical knowledge and understanding and the skills needed to apply it in a range of contexts, helping you to develop a broad and relevant set of skills and experiences.

### CONTENT AND ASSESSMENT

The following units are mandatory units:

- 1. F170: Fundamentals of human biology** - Externally assessed exam.
- 2. F171: Health and disease** - Externally assessed exam.
- 3. F172: Genetics** - Controlled assessment.
- 4. F173: Biomedical techniques** - Controlled assessment.

In addition to those above, 2 optional units will also be completed in order to bring up the total number of units needed for the single qualification.

### ENTRY REQUIREMENTS

Students should be aiming to achieve a grade 44 in combined science.



## IT: DATA ANALYTICS - CAMBRIDGE ADVANCED NATIONAL (Extended Certificate)

(Equivalent to 1 A-Level)

Awarding Body: OCR

Course Code: H119

QAN: 610/3997/4 - [Click here for more information](#)

### OVERVIEW OF THE COURSE

This is a two-year, Level 3 qualification equivalent to one A Level. Overview of the Course:

The Cambridge Advanced National Extended Certificate in IT: Data Analytics is a two-year Level 3 qualification equivalent to one A Level. Students develop both practical skills and theoretical knowledge in data analytics, learning how to gather, process and analyse data, create data models, work with databases, and understand concepts like big data and machine learning. The course prepares students for higher education or careers in data analysis, business intelligence, and digital technologies.

### CONTENT AND ASSESSMENT

- Understanding data types, sources and structures
- Data lifecycle management and analytics techniques
- Big data concepts and machine learning principles
- Creating spreadsheet models and databases
- Digital marketing using data insights

Total of 5 units:

- 2 written exams: Fundamentals of data analytics (1 hour 15 minutes) and Big data and machine learning (1 hour 30 minutes)
- 3 practical project assessments from options including: Spreadsheet data modelling; Relational database design; Data visualisation; Digital marketing; Internet of Everything (IoE)

Project assessments will be discussed in more detail at the start of the course.

Students complete practical projects under supervised conditions throughout the course. Grades are awarded from Pass to Distinction (P, M, D, D\*), and the qualification carries UCAS points for university applications.

**ENTRY REQUIREMENTS** - GCSE English and Maths at grade 5 or above and a grade 5 or above in IT related GCSE, if studied.

## BUSINESS EXTENDED CERTIFICATE - CAMBRIDGE TECHNICAL

(Equivalent to 1 A-Level)

Awarding Body: OCR

Course Code: 05835

QAN: 601/7699/4 - [Click here for more information](#)

### OVERVIEW OF THE COURSE

This qualification will provide learners with the skills, knowledge and understanding to progress into Higher Education on a business-related programme. The mandatory unit will give learners an understanding of the wider external contexts in which businesses operate and of internal business functions and their interdependencies, and allow learners to appreciate how legal, financial, ethical and resource constraints can affect business behaviour and the influence that different stakeholders can have and how businesses must respond. The optional units cover a wide range of topics to give learners the opportunity to take a unit that is relevant to a specific aspect of business.

### CONTENT AND ASSESSMENT

**Unit 1: The business environment** – In this unit you will develop an understanding of how and why businesses operate in the way they do. You will look at a range of different types of business and business structures, and explore how the ownership of a business and its objectives are interrelated.

**Unit 2: Working in business** – This unit will cover the skills and understanding needed to work effectively within a business environment. This includes arranging meetings, working with business documents, making payments, prioritising business activities and communicating with stakeholders.

**Unit 4: Customers and communication** – In this unit you will learn the purpose, methods and importance of communication in business and the appropriateness of different forms of communication for different situations. You will develop the skills that will help you create a rapport with customers and have the opportunity to practise and develop your communication skills.

**Unit 5: Marketing and market research** – This unit has particular emphasis on the role of market research and how it contributes to marketing decision-making, and the actions a business may take.

**Unit 8: Introduction to human resources** – In this unit you will gain an overview of the HR function and learn about factors affecting human resources planning.

**Assessment:** Units 1 and 2 are external examinations that take place in Year 12 and 13. Units 4, 5 and 8 are internally assessed pieces of coursework.

### ENTRY REQUIREMENTS

GCSE English and Maths at grade 4 or above and a grade 5 or above in Business GCSE if studied.

## ART AND DESIGN - 3D Dimensional Design, Environmental and Architecture Design - A LEVEL

Awarding Body: AQA

Course Code: 7201

QAN: [601/4456/7](#) - [Click here for more information](#)

### OVERVIEW OF THE COURSE

Students will be introduced to a variety of experiences that explore a range of three-dimensional media, processes and techniques and will be made aware of both traditional and new media. Students will explore the use of drawing for different purposes, using a variety of methods and media on a variety of scales. Students may use sketchbooks / workbooks / journals to underpin their work, where appropriate. Students will explore relevant images, artefacts and resources relating to a range of architectural design, from the past and from recent times, including European and non-European examples.

### CONTENT AND ASSESSMENT

#### Component 1

Personal investigation - Internally Assessed

No time limit

96 marks

60% of A-level

Non-exam assessment (NEA) set and marked by the centre and moderated by AQA during a visit to the centre. Visits will normally take place in June.

#### Component 2

Response to an externally set assignment

Preparatory period + 15 hours supervised time

96 marks

40% of A-level

Non-exam assessment (NEA) set by AQA, marked by the centre and moderated by AQA during a visit to the centre. Visits will normally take place in June

### ENTRY REQUIREMENTS

Grade 5 or above in a GCSE design related subject and GCSE English at Grade 4 is recommended.

## BIOLOGY - A-LEVEL

Awarding Body: AQA

Course Code: 7402

QAN: 601/4625/4 - [Click here for more information](#)

### OVERVIEW OF THE COURSE

Biology A-level will give you the skills to make connections and associations with all living things around you. Biology literally means the study of life and if that's not important, what is? Being such a broad topic, you're bound to find a specific area of interest, plus it opens the door to a fantastic range of interesting careers. This qualification is linear. Linear means that students will sit all their exams at the end of the course.

### CONTENT AND ASSESSMENT

**Paper 1** – 2 hour exam worth 35% of the final grade.

- Biological molecules.
- Cells.
- Organisms exchange substances with their environment.
- Genetic information, variation and relationships between organisms.

**Paper 2** – 2 hour exam worth 35% of the final grade.

- Energy transfers in and between organisms
- Organisms respond to changes in their internal and external environments
- Genetics, populations, evolution and ecosystems
- The control of gene expression

**Paper 3** – 2 hour exam worth 30% of the final grade.

Any content from the 2-year course can be assessed from any unit and any practical.

There is no coursework on this A-Level. However, your performance during practicals will be assessed. At least 15% of the marks for A-Level Biology are based on what you learned in your practicals.

### ENTRY REQUIREMENTS

GCSE Biology at grade 6 or GCSE Combined Science at grade 6 (with grade 6 in the Biology unit exams) is required.

## CHEMISTRY - A-LEVEL

Awarding Body: AQA

Course Code: 7405

QAN: 601/5731/8 - [Click here for more information](#)

### OVERVIEW OF THE COURSE

A-Level Chemistry attempts to answer the big question 'what is the world made of' and it is the search for this answer that makes this subject so fascinating. From investigating how one substance can be changed drastically into another, to researching a new wonder drug to save millions of lives, the opportunities that chemistry provides are endless.

### CONTENT AND ASSESSMENT

**Paper 1** – 2 hour exam worth 35% of the final grade.

**Physical Chemistry:** Atomic structure, amount of substance, bonding, energetics, chemical equilibria, Le Chatelier's principle and  $K_c$ , Oxidation, reduction and redox equations, Thermodynamics, Equilibrium constant  $K_p$  for homogenous systems, Electrode potentials and electrochemical cells, acids and bases.

**Inorganic Chemistry:** Periodicity, group 2, group 7, properties of period 3 elements and their oxides, transition metals, reactions of ions in aqueous solution.

**Paper 2** – 2 hour exam worth 35% of the final grade.

**Physical Chemistry:** Amount of substance, bonding, energetics, kinetics, chemical equilibria, Le Chatelier's principle and  $K_c$ , rate equations.

**Organic Chemistry:** Introduction to organic chemistry, alkanes, halogenoalkanes, alkenes, alcohols, organic analysis, optical isomerism, aldehydes and ketones, carboxylic acids and derivatives, aromatic chemistry, amines, polymers, amino acids, proteins and DNA, organic synthesis, NMR, chromatography.

**Paper 3** – 2 hour exam worth 30% of the final grade.

Any content from the 2-year course can be assessed from any unit and any practical.

There is no coursework on this A-Level. However, your performance during practicals will be assessed. At least 15% of the marks for A-Level Chemistry are based on what you learned in your practicals.

### ENTRY REQUIREMENTS

GCSE Chemistry at grade 6 or GCSE Combined Science at grade 66 (with grade 6 in the Chemistry unit exams) is required.

## COMPUTER SCIENCE - A-LEVEL

Awarding Body: OCR

Course Code: H446

QAN: 601/4911/5 - [Click here for more information](#)

### OVERVIEW OF THE COURSE

This course helps students understand the core academic principles of computer science. Classroom learning is transferred into creating real-world systems through the creation of an independent programming project.

### CONTENT AND ASSESSMENT

#### **Component 1 – Systems [40% of A-Level]**

The internal workings of the CPU, data exchange, software development, data types and legal and ethical issues.

**Assessment:** Written exam, 2 hours and 30 minutes.

#### **Component 2 – Algorithms and programming [40% of A-Level]**

This builds on component 1 to include computational thinking and problem solving. The focus of this component is developing an understanding of standard algorithms and how to interpret real world problems as a combination of variables and structures which can be manipulated in the digital world.

**Assessment:** Written exam, 2 hours and 30 minutes.

#### **Paper 3 – Programming project [20% of A-Level]**

Students are expected to apply the principles of computational thinking to a practical programming project. They will analyse, design, develop, test, evaluate and document a program written in a suitable programming language. The project is designed to be independently chosen by the student and provides them with the flexibility to investigate projects within the diverse field of computer science.

**Assessment:** Internally marked non examined assessment. This will take approximately 70 hours to complete.

### ENTRY REQUIREMENTS

Grade 6 or above in GCSE Maths, and in GCSE Computer Science or relevant ICT course desirable.

## ELECTRONICS - A-LEVEL

Awarding Body: WJEC

Course Code: A490QS

QAN: 603/0777/8 - [Click here for more information](#)

### OVERVIEW OF THE COURSE

The WJEC Electronics A level specification provides a sound foundation for the study of electronics or a related area and is a natural progression from GCSE electronics. Successful study will require strong applied maths skills. Studying electronics at A level and beyond provides great job opportunities for Electrical/Electronic Engineers in the UK, including transport networks, renewable energy sources, manufacturing and construction, systems design, programming, robotics and medical engineering. Universities and employers widely recognise the status and value of this A level. Electronics expertise sits alongside CAD and programming skills as one of the most desirable strengths in many companies attracting preferential and higher salaries than other engineering disciplines.

### CONTENT AND ASSESSMENT

The subject is taught in modules and examined at the end of Year 13. The exam is based around students demonstrating core concepts across three component assessments.

**C1 Principles of electronics** - 40% written examination (Knowledge and understanding) - 2hr 45m

1. Semiconductor components
2. Logic Systems
3. Operational Amplifiers
4. Signal Conversion
5. AC circuits and passive filters
6. Wireless transmission
7. Instrumentation systems

**C2 Application of electronics** - 40% written examination (Applying knowledge and skills) - 2hr 45m

1. Timing Circuits
2. Sequential Logic systems
3. Microcontrollers
4. Digital Communications
5. Optical communication
6. Mains power systems
7. High power switching systems
8. Audio systems

**C3 Extended System Design** - 20% NEA coursework (Design, analysis and evaluation)

The NEA is an integral part of the A level and is 20% of the total examination. It requires each learner to complete two tasks independently. These build on the concepts studied throughout the specification. The tasks are both academic and practical in nature and reflect learning from components 1 and 2.

### ENTRY REQUIREMENTS

Grade 6 in GCSE Electronics or GCSE Mathematics.

## FURTHER MATHEMATICS - A-LEVEL

Awarding Body: Pearson

Course Code: 9FM0

QAN: 603/1499/0 - [Click here for more information](#)

### OVERVIEW OF THE COURSE

In this course you will complete more units from the GCE (A-Level) in Mathematics, leading to an additional A-Level qualification in Further Maths. The course is designed to be taught alongside A-Level Mathematics and consists of two compulsory Core Pure Maths units (CP1 & CP2) and two more optional units. There is a degree of flexibility with the optional units to be studied, and this is to be decided in conjunction with teachers. This year we are teaching the FS1 (Further Statistics) and FM1 (Further Mechanics) units.

Many students who take a qualification in Further Maths go on to read Mathematics at university and perhaps then become professional mathematicians. Most, however, are taking Mathematics as a support subject for a wide variety of fields including financial services and medicine.

### CONTENT AND ASSESSMENT

The Advanced GCE in Further Mathematics consists of distinct pure and applied topics:

- Pure (CP1 and CP2) – Proof, Complex numbers, Matrices, Algebra and functions, Calculus, Vectors, Polar coordinates, Hyperbolic functions & Differential equations.
- Statistics (FS1) – Probability distributions and functions, Statistical distributions, Hypothesis testing, Statistical testing.
- Mechanics (FM1) – Momentum and impulse, Work, energy and power, Elastic collisions in one and two dimensions.

Assessment is in the form of externally assessed written examinations, which are taken at the end of the two year programme.

- Four written papers: each contributes 25% of the final grade.
- Each paper lasts 1 hour and 30 minutes.
- 75 marks on each paper.

### ENTRY REQUIREMENTS

Grade 8 or above in GCSE Mathematics.



## MATHEMATICS - A-LEVEL

Awarding Body: Pearson

Course Code: 9MA0

QAN: 603/1333/X - [Click here for more information](#)

### OVERVIEW OF THE COURSE

In this course you will build on the knowledge, skills and understanding learnt during your GCSE Maths studies, as well as develop confidence in applications of mathematics, such as statistics and mechanics, which will help consolidate learning in other subjects, especially the sciences and engineering. A-Level Maths encourages students to develop confidence in, and a positive attitude towards, mathematics and to recognise the importance of mathematics in their own lives and to society. This qualification prepares students to make informed decisions about the use of technology, further learning opportunities and career choices.

### CONTENT AND ASSESSMENT

This A-Level consists of distinct pure and applied topics:

- Pure – Proof, Algebra and functions, Coordinate geometry in the  $(x, y)$  plane, Sequences and series, Trigonometry, Exponentials and logarithms, Differentiation, Integration, Numerical methods, and Vectors.
- Statistics – Statistical sampling, Data presentation and interpretation, Probability, Statistical distributions, Statistical hypothesis testing.
- Mechanics – Quantities and units in mechanics, Kinematics, Forces and Newton's laws, Moments.

Assessment is in the form of externally assessed written examinations, which are taken at the end of the two year programme.

- Three written papers: each contributing 33.3% of the final grade.
- Each paper lasts 2 hours.
- 100 marks on each paper.

### ENTRY REQUIREMENTS

Grade 7 or above in GCSE Mathematics.

## PHYSICS - A-LEVEL

Awarding Body: AQA

Course Code: 7408

QAN: 601/4747/7 - [Click here for more information](#)

### OVERVIEW OF THE COURSE

Studying Physics gives students the opportunity to expand upon their understanding from GCSE science and is a common prerequisite for further study of engineering or sciences. This qualification is linear meaning that students will sit all their exams and submit all their non-exam assessments at the end of the course.

### CONTENT AND ASSESSMENT

1. Measurements and their errors
2. Particles and radiation
3. Waves
4. Mechanics and materials
5. Electricity
6. Further mechanics and thermal physics
7. Fields and their consequences
8. Nuclear physics
9. Astrophysics

#### Assessment:

**Paper 1** – 2 hour written exam based on sections 1-5 and 6.1 worth 34% of the final grade.

**Paper 2** – 2 hour written exam based on Sections 6.2, 7 and 8 with assumed knowledge from previous sections worth 34% of the final grade.

**Paper 3** – 2 hour written exam based on practical skills and astrophysics worth 32% of the final grade.

### ENTRY REQUIREMENTS

GCSE Physics at grade 6 or GCSE Combined Science at grade 66 (with grade 6 in the Physics unit exams) is required.

Students wishing to study A-Level Physics must also study A-Level Mathematics, due to the significant overlap in content.

## PRODUCT DESIGN - A-LEVEL

Awarding Body: AQA

Course Code: 7552

QAN: 603/1133/2 - [Click here for more information](#)

### OVERVIEW OF THE COURSE

This creative and thought-provoking qualification gives students the practical skills, theoretical knowledge and confidence to succeed in a number of careers. Especially those in the creative industries. They will investigate historical, social, cultural, environmental and economic influences on design and technology, whilst enjoying opportunities to put their learning into practice by producing products of their choice. Students will gain a real understanding of what it means to be a designer, alongside the knowledge and skills sought by higher education and employers.

### CONTENT AND ASSESSMENT

**Paper 1: Technical principles** – Written exam: 2 hours and 30 minutes worth 30% of the A-Level.

Students are expected to be able to name specific materials for a wide range of applications. They must also be able to provide detailed and justified explanations of why specific materials and combinations of materials are suitable for given applications, with reference to: physical and mechanical properties (working characteristics), product function, aesthetics, cost, manufacture and disposal.

**Paper 2: Designing and making principles** – Written exam: 1 hour and 30 minutes worth 20% of the A-Level.

Students should be aware of, and able to explain, different approaches to user centred design. That in approaching a design challenge there is not a single process, but that good design always addresses many issues, including: designing to meet needs, wants or values, investigations to inform the use of primary and secondary data, the development of a design proposal, the planning and manufacture of a prototype solution and the evaluation of a prototype solution to inform further development.

**Non-exam assessment (NEA)** – Practical application of technical principles, designing and making principles (50% of the A-level)

A substantial design and make project worth 50% of the A-Level. Evidence can be written or digital design portfolio and photographic evidence of the final prototype.

### ENTRY REQUIREMENTS

Grade 6 or above in GCSE Product Design or an equivalent design subject and GCSE Maths at Grade 5 is recommended.