

# YEAR 12 CURRICULUM BOOKLET

2024 - 2026

SCAN HERE TO APPLY



## Contents

INTRODUCTION	2
GUIDANCE ON PROGRAMME OF STUDY	3
T LEVEL TECHNICAL QUALIFICATION IN ENGINEERING, MANUFACTURING, PROCESSING AND CONTROL	4
ENGINEERING DIPLOMA - BTEC LEVEL 3	5
APPLIED SCIENCE EXTENDED CERTIFICATE - BTEC	6
ART AND DESIGN EXTENDED CERTIFICATE - BTEC	7
BIOLOGY A-LEVEL	8
BUSINESS EXTENDED CERTIFICATE - BTEC	9
CHEMISTRY A-LEVEL	10
COMPUTER SCIENCE A-LEVEL	11
ENGINEERING EXTENDED CERTIFICATE - BTEC LEVEL 3	12
ENGLISH LANGUAGE AND LITERATURE A-LEVEL	13
ELECTRONICS A-LEVEL	14
FURTHER MATHEMATICS A-LEVEL	15
GEOGRAPHY A-LEVEL	16
INFORMATION TECHNOLOGY EXTENDED CERTIFICATE - CAMBRIDGE TECHNICAL	17
MATHEMATICS A-LEVEL	18
PHYSICS A-LEVEL	19
PRODUCT DESIGN A-LEVEL	20
EXTENDED PROJECT QUALIFICATION - LEVEL 3	21
MATHEMATICAL STUDIES - LEVEL 3 (CORE MATHS)	22
GCSE ENGLISH LANGUAGE & MATHEMATICS	23

## INTRODUCTION

We look forward to welcoming you to the WMG Academy for Young Engineers in September 2024. 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. Where possible we will accommodate your chosen options and year on year this happens in the vast majority of bases. However as we offer a student led curriculum based on the options students select or opt for each year this would be reviewed if group sizes were deemed to be too big or small. We reserve the right not to run courses which are not viable. If this is the case we will talk to you as soon as possible to advise you of this.

Choosing your Post 16 programme of study is an important decision to make. We recommend that you carry out research into your choice of potential careers, talk to your parents/carers and contact universities and companies about 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 fully in a pastoral and enrichment programme which includes apprehensive careers and destinations guidance. 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.

In addition to the subjects that are laid out in this booklet, we encourage and support community languages. We appreciate that students coming to WMG academy come from a range of backgrounds and cultures, therefore if there is a language that you are fluent in and wish to sit an A level qualification in please contact [s.rhodes@wmgacademy.org.uk](mailto:s.rhodes@wmgacademy.org.uk)

## GUIDANCE ON APPLYING FOR A PLACE IN SIXTH FORM

The WMG Academy for Young Engineers understands the complexity of choosing your Post 16 programme of study and has prepared the following support to assist you:

### RESEARCH

Please read through all of the course information within this booklet. Think about where you want to be in two to five years time and find out what you need to do to achieve your aspirations and aims. Contact universities, further education colleges and companies that offer apprenticeships. Look at their entry requirements and then think about your strengths and weaknesses. Do they match up?

### ADMISSION PROCEDURE

Applications for Post 16 / Sixth Form courses are sent directly to WMG Academy by the 31st January 2024.

Students applying should follow the QR code on the website or on the front page of this booklet.

Once applications have been received after the 31st January 2024, the Academy Admissions Team will contact students to invite them for guidance discussions to support pathway choices.

Please ensure you supply a current, regular email address of both **student and parents** on the application form so we can regularly update you with information .

### EVENTS

We will host a number of events that you will be invited to attend - coffee mornings, taster days, Warwick University visit, meet employers; please look out for emails with dates and timings and get yourself signed up for them.

### GCSE RESULTS - THURSDAY 22ND AUGUST 2024

On the day of your GCSE results, we ask that you come to the academy, bringing a copy of your GCSE results so we can confirm your programme of study. Your programme of study can be adjusted at this stage if you have performed differently to as you expected in your GCSEs. Details regarding how to do this will be sent out to all applicants nearer the time.

### INDUCTION DAYS

You will have an induction programme at the beginning of the term in 2024 when you join the academy to familiarise yourself with the academy, our staff and how we support students on their journey with us.

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

Awarding Body: City & Guilds

Course Code: 8730 / 8713

QAN: 610/0971/4

## OVERVIEW OF THE COURSE

T-Levels are new courses which will follow GCSEs and will be 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 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 both English and Maths at grade 5.

### T-Level Transition Course

Students that do not meet the entry requirements for the T-level course but still would like to study it can enter the T-level Foundation programme. This program will develop the students Maths knowledge and understanding, improve their oracy and presentation skills as well as developing their practical skills in the workshops and will offer work experience opportunities in preparation for the full T-level course. By enrolling onto the foundation course students will spend 3 years in the 6th form studying engineering.

## ENGINEERING DIPLOMA - BTEC LEVEL 3

(Equivalent to 2 A Levels)

Awarding Body: Pearson

QAN:601/7588/6

### OVERVIEW OF THE COURSE

The BTEC Level 3 in Engineering has been designed to give new entrants to the engineering sector the underpinning knowledge and specific skills needed to meet the needs of modern mechanical engineering industries. This qualification is designed both for those students who wish to enter employment, apprenticeships or those who plan to progress into Higher Education, for example to BTEC Higher Nationals and undergraduate engineering degree qualifications.

The course has the option of studying the equivalent to either a 1 or 2 A levels. This gives the student the option of studying other A levels alongside an engineering subject.

### CONTENT AND ASSESSMENT

Students will complete 10 units.

Units 1-5 are compulsory for the Diploma.

Unit	Unit Name	Internal / External
Unit 1	Engineering principles	External
Unit 2	Delivery of engineering processes safely as a team	Internal
Unit 3	Engineering product design and manufacture	External
Unit 4	Applied commercial and quality principles in engineering	Internal
Unit 5	A specialist engineering project	Internal
Unit 7	Calculus to solve engineering problems	Internal
Unit 10	Computer aided design in engineering	Internal
Unit 18	Electrical power distribution and transmission	Internal
Unit 24	Maintenance of mechanical systems	Internal
Unit 25	Mechanical Behaviour of Metallic Materials	Internal

### ENTRY REQUIREMENTS

Grade 5 in GCSE Maths and English, however a Grade 6 in Maths is preferable.

## APPLIED SCIENCE EXTENDED CERTIFICATE - BTEC

(Equivalent to – 1 A Level)

Awarding Body: Pearson

QAN: 601/7436/5

### 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 or 8 modules, depending on whether students are entering for the single or double A-Level equivalent. Around 25% of the course is exam assessed, while the remaining units are coursework or controlled assessments.

### CONTENT AND ASSESSMENT

The following units are mandatory units:

1. **Principles and Applications of Science** - Externally assessed exam.
2. **Practical Scientific Procedures and Techniques** - Coursework.
3. **Science Investigation Skills** - Controlled assessment.

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

**Optional units:** Microbiology and Microbiological Techniques, Forensic Evidence, Collection and Analysis, Physiology and Human Body Systems, Human Regulation and Reproduction.

### ENTRY REQUIREMENTS

Students should be aiming to achieve a grade 5-5 in combined science.

## ART AND DESIGN EXTENDED CERTIFICATE - BTEC

(Equivalent to 1 A Level)

Awarding Body: Pearson

QAN: 601/7228/9

### OVERVIEW OF THE COURSE

The qualification gives a coherent introduction to the study of art and design. Learners develop art and design projects and gain an understanding of the creative process. The qualification is designed for post-16 learners who aim to progress to higher education and ultimately to employment, possibly in the creative industries, as part of a programme of study alongside other BTEC Nationals or A Levels.

### CONTENT AND ASSESSMENT

The following units are mandatory units:

- 1 Visual Recording and Communication
2. Critical and Contextual Studies in Art and Design
3. The Creative Process

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

### ENTRY REQUIREMENTS

GCSE Art or Design at Grade 6 or Level 2 Merit.



## BIOLOGY A-LEVEL

Awarding Body: OCR Biology A

Course Code: H420

QAN: 601/4260/1

### 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 is not important, what is? Being such a broad topic, you are bound to find a specific area of interest, and 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 15 minutes exam worth 37% of the final grade.

- Development of practical skills in biology
- Foundations in biology
- Exchange and transport
- Communication and homeostasis

**Paper 2** – 2 hour 15 minutes exam worth 37% of the final grade.

- Development of practical skills in biology
- Foundations in biology
- Biodiversity, evolution and disease
- Genetics, evolution and ecosystems

**Paper 3** – 1 hour and 30 minutes exam worth 26% of the final grade.

Any content from the 2-year course can be assessed from any unit and any practical (Units 1-6) 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.

## **BUSINESS EXTENDED CERTIFICATE - BTEC**

(Equivalent to – 1 A Level)

Awarding Body: Pearson

QAN: 601/7159/5

### **OVERVIEW OF THE COURSE**

The BTEC Business course will enable students to gain knowledge and understanding of the business sector with an emphasis on developing skills relevant to the workplace. Varied teaching methods are used throughout the course and assessment is based upon authentic business situations.

Approximately 50 % of the course is exam assessed, while the remaining units are all coursework assessed. Students will have the opportunity to attend a work experience placement of their choice, which will also contribute to their qualification.

Students will study three mandatory units (Unit 1, 2 and 3) and one optional unit- Unit 8.

### **CONTENT AND ASSESSMENT**

- Unit 1 Exploring Business (Internal Assessed)
- Unit 2 Developing a Marketing Campaign (External Assessed)
- Unit 3 Personal and Business Finance (External Assessed)
- Unit 8 Recruitment and Selection process. (Internal Assessed)

### **ENTRY REQUIREMENTS**

Students will need a grade 5 in GCSE English and Maths as well as another 3 GCSE or equivalent qualifications at grade 5 or above.

## CHEMISTRY A-LEVEL

Awarding Body: AQA

Course Code: 7405

QAN: 601/5731/8

### 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 required practicals.

### ENTRY REQUIREMENTS

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

## COMPUTER SCIENCE A-LEVEL

Awarding Body: OCR

Course Code: H446

QAN: 601/4911/5

### 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. This A-Level will develop the student's technical understanding and their ability to analyse and solve problems using computational thinking.

### CONTENT AND ASSESSMENT

#### **Paper 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.

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

This builds on component 01 to include computational thinking and problem solving. Using computational thinking to solve problems.

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

### ENTRY REQUIREMENTS

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

## ENGINEERING EXTENDED CERTIFICATE - BTEC LEVEL 3

(Equivalent to 1 A LEVEL)

Awarding Body: Pearson

QAN: 601/7584/9, 601/7580/1

### OVERVIEW OF THE COURSE

The BTEC Level 3 in Engineering has been designed to give new entrants to the engineering sector the underpinning knowledge and specific skills needed to meet the needs of modern mechanical engineering industries. This qualification is designed both for those students who wish to enter employment, apprenticeships or those who plan to progress into Higher Education, for example to BTEC Higher Nationals and undergraduate engineering degree qualifications.

The course has the option of studying the equivalent to either a 1 or 2 A levels. This gives the student the option of studying other A levels alongside an engineering subject.

### CONTENT AND ASSESSMENT

Students completing the Extended Certificate (1 A-Level equivalent) will complete 4 units.

\*Unit 1-3 are compulsory for the Extended Certificate

Unit	Unit Name	Internal / External
Unit 1	Engineering principles*	External
Unit 2	Delivery of engineering processes safely as a team*	Internal
Unit 3	Engineering product design and manufacture*	External
Unit 10	Computer aided design in engineering	Internal

### ENTRY REQUIREMENTS

Grade 5 in GCSE Maths and English, however a Grade 6 in Maths is preferable.

## ENGLISH LANGUAGE AND LITERATURE A-LEVEL

Awarding Body: AQA

Course Code: 7707

QAN: 601/4641/2

### OVERVIEW OF THE COURSE

English Lang/Lit A level gives students an opportunity to study fascinating elements of both language and literature. The course enables students to delve deeper into a wide variety of texts: classic Literature written by famous authors and more modern texts from authors of diverse backgrounds. As well as studying characterization and plot students can explore how we communicate, how words and language have developed and what this means for us as and society. Studying English Literature and Language gives you the tools to analyse the spoken and written word critically and creatively.

### CONTENT AND ASSESSMENT

#### **Paper 1 - 3 hour exam worth 40% of grade**

- Remembered places – the representation of place
- Imagined worlds – point of view and genre in prose
- Poetic voices – the forms and functions of poetic voice
- Methods of language analysis are integrated into the activities

#### **Paper 2 - 2 hour 30 mins worth 40% of grade**

- Writing about society – the role of the individual in society, and re-creative writing based on set texts
- Critical commentary – evaluating own writing
- Dramatic encounters – conflict in drama
- Methods of language analysis are integrated into the activities

#### **Non-Examination Assessment (NEA) Assessed by teachers. Moderated by AQA worth 20% of grade**

A personal investigation that explores a specific technique or theme in both literary and non-literary discourse (2,500–3,000 words)

- Making connections – investigation on a chosen theme and texts
- Methods of language analysis are integrated into the activity

### ENTRY REQUIREMENTS

GCSE English Language and Literature Grade 6 and above.

## ELECTRONICS A-LEVEL

Awarding Body: WJEC

Course Code: A490QS

QAN: 603/0777/8

### 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 & understanding)- 2hr45m

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 & skills)- 2hr45m

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

### 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 some then go into mathematics research. This isn't the only path for our Further Mathematics students however: their work on complex numbers will serve them well in many fields, such as electronic engineering; and studying matrices is a great introduction to some of the concepts found in structural engineering, and even quantum mechanics.

### 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.



## GEOGRAPHY A-LEVEL

Awarding Body: AQA

Course Code: 7037

QAN: 601/8940/X

### OVERVIEW OF THE COURSE

Studying Geography gives students the opportunity to travel the world via the classroom, learning about both natural and social sciences along the way. 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

There are 3 components to A-Level Geography:

#### 1. **Physical Geography [40% of A-Level]**

**Section A:** Water and carbon cycles.

**Section B:** Either hot desert systems and landscapes or coastal systems and landscapes or glacial systems and landscapes.

**Section C:** Either hazards or ecosystems under stress.

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

#### 2. **Human Geography [40% of A-Level]**

**Section A:** Global systems and global governance.

**Section B:** Changing places.

**Section C:** Either Contemporary urban environments or population and the environment or resource security.

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

#### 3. **Geography fieldwork investigation [20% of A-Level]**

Students complete an individual investigation which must include data collected in the field. The individual investigation must be based on a question or issue defined and developed by the student relating to any part of the specification content.

**Assessment:** 3,000 - 4,000 words.

### ENTRY REQUIREMENTS

Grade 6 or above in GCSE Geography if studied at GCSE.

# INFORMATION TECHNOLOGY EXTENDED CERTIFICATE - CAMBRIDGE TECHNICAL

(Equivalent to – 1 A Level)

Awarding Body: OCR

Course Code: 05839

QAN: 601/7098/0

## OVERVIEW OF THE COURSE

Cambridge Technicals in IT allows students to gain an insight into IT and cybersecurity. Through practical and project-based work, students will develop knowledge and skills in areas such as infrastructure, cyber security, information and project management.

## CONTENT AND ASSESSMENT

**Unit 1: Fundamentals of IT** – A sound understanding of IT technologies and practices is essential for IT professionals. Information learnt in this unit will provide a solid foundation in the fundamentals of hardware, networks, software, the ethical use of computers and how business uses IT.

**Unit 2: Global Information** – The purpose of this unit is to demonstrate the uses of information in the public domain, globally, in the cloud and across the internet, by individuals and organisations. You will discover that good management of both data and information is essential, and that it can give any organisation a competitive edge.

**Unit 3: Cyber Security** – We rely on computerised systems in all walks of life. However, some people have found ways to exploit them and this poses a threat to our safety and security. To deal with this problem the cyber security industry is expanding at a rapid rate. This unit has been designed to enable you to gain knowledge and understanding of the range of threats, vulnerabilities and risks that impact on both individuals and organisations.

**Unit 8: Project Management** – This unit will provide you with the opportunity to understand and use various project planning skills and techniques, thereby enabling you to become more effective in the workplace. Project management skills are essential transferrable skills that can be used for all IT related projects whether it's traditional methodologies or more recently adapted agile approaches within the IT development environment.

**Unit 17: Internet of Everything** – This unit is about the use of the internet and how it is impacting people and society. You will learn about the Internet of Everything (IoE) and how it is used.

## ENTRY REQUIREMENTS

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

## MATHEMATICS A-LEVEL

Awarding Body: Pearson

Course Code: 9MA0

QAN: 603/1333/X

### 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. A-Level Maths encourages students to develop confidence in mathematics and to recognise its importance in society and in their own lives. This qualification prepares students to make informed decisions about the use of technology, further learning opportunities and career choices.

A-level maths will also support your learning in other subjects, such as physics, chemistry, and engineering.

### 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: OCR

Course Code: H556

QAN: 601/4743/X

### 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 at the end of the course. Practical experiments are essential throughout the course and lead to a “Practical Endorsement” separate from the A level grade.

### CONTENT AND ASSESSMENT

1. Practical skills
2. Measurement and units
3. Forces, motion and materials
4. Electrons, waves and Quantum physics
5. Newtonian world and astrophysics
6. Particles and medical physics

**Paper 1** – Written exam “Modelling Physics” worth 37% of the final grade.

**Paper 2** – Written exam “Exploring Physics” worth 37% of the final grade.

**Paper 3** – Written exam “Unified Physics” worth 26% of the final grade.

**Practical Endorsement in Physics** – Reported separately from the A level grade.

### ENTRY REQUIREMENTS

GCSE Physics at grade 7 or GCSE Combined Science at grade 7 (with grade 6 in the Physics unit exams) is required. GCSE Maths at grade 6 is also required.

Studying A-Level Mathematics is highly recommended.

## PRODUCT DESIGN A-LEVEL

Awarding Body: AQA

Course Code: 7552

QAN: 603/1133/2

### 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**

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.

## EXTENDED PROJECT QUALIFICATION - LEVEL 3

Awarding Body: AQA

Course Code: 7993

QAN: 600/953/49

### OVERVIEW OF THE COURSE

The Extended Project is a stand-alone task and the topic is chosen by the learner. It can relate to any aspect of engineering or manufacturing and will be assessed via an internal assessment which can be in the form of a dissertation, report, design portfolio, design-and-make or manufactured artefact. Learners will develop and extend research; identifying, designing, planning and completing an individual project as well as applying a range of organisational skills. They will need to select information from a range of sources, analyse data, and solve problems to complete their final project outcome. Learners will be allocated a supervisor to oversee and guide them through the project.

### CONTENT AND ASSESSMENT

#### Learners must complete:

A project log which details how they have planned, researched and evaluated their project.

A Project which can be presented as:

- a 5000 word dissertation
- an artefact, model or construction
- a CD/video/DVD of performances or activities
- an audiotape/multimedia presentation
- a journal of activities or events
- a slide or PowerPoint presentation
- a photographic record of the project

Project products must include a written report of between 1000 and 5000 words and a presentation on the process followed and the outcomes produced.

### ENTRY REQUIREMENTS

There are no specific entry criteria for this course.

## MATHEMATICAL STUDIES - LEVEL 3 (CORE MATHS)

Awarding Body: AQA

Course Code: 1350

QAN: 601/4945/0

### OVERVIEW OF THE COURSE

Level 3 Mathematical Studies is our accredited Core Maths qualification. Brought in by the Government, Core Maths is designed for students with a grade 4 or above in GCSE maths who want to take the subject further, but aren't moving forward with another post-GCSE maths course. The use of real-life scenarios will appeal to students who prefer a less academic approach and appreciate the value of everyday maths and problem-solving skills. It will also support them through further/higher education and the learned skills will be useful in future employment. At 180 guided learning hours and with three options to choose from, Level 3 Mathematical Studies is a valuable addition to any student's personal learning plan.

It helps to develop students' mathematical skills and thinking and supports courses such as A-level Psychology, Sciences and Geography as well as technical and vocational qualifications.

### CONTENT AND ASSESSMENT

Paper 1 (compulsory content, taken by all students) assesses:

- Analysis of data
- Maths for personal finance
- Estimation.

Paper 2 (optional content – students take one paper only)

Either paper 2A assesses:

- Critical analysis of given data and models including spreadsheets and tabular data
- Statistical techniques.

Or paper 2B assesses:

- Critical analysis of given data and models including spreadsheets and tabular data
- Critical path and risk analysis.

Or paper 2C assesses:

- Critical analysis of given data and models including spreadsheets and tabular data
- Graphical techniques.

### ENTRY REQUIREMENTS

A Grade 4 or above in GCSE English Language. GCSE Maths must be at Grade 5 or above.

## GCSE ENGLISH LANGUAGE & MATHEMATICS

### (RETAKE)

Awarding Body: AQA English Pearson Maths

Course Code: 8700 (English Language) & IMA1 (Mathematics)

QAN: 601/4292/3 (English Language) & 601/4700/3 (Mathematics)

### OVERVIEW OF THE COURSE

Students who have not achieved a grade 4 in their English or Mathematics GCSEs are required to continue studying the course as part of their Sixth Form programme until they achieve that grade.

### CONTENT AND ASSESSMENT

Students retaking either English or Maths GCSE will have the opportunity to retake their exams in November. If they are not successful at achieving a grade 4 or above, they will then continue studying the subject and sit the summer examinations.

### ENTRY REQUIREMENTS

This option is only for students who have not achieved a grade 4 in their English or Mathematics GCSE. Students can only be offered a place in the Sixth Form where one retake subject is required. Students needing to retake both English and Mathematics will unfortunately not be able to attend the WMG Academy Sixth Form.