

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.

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; look at their entry requirements and then think about your strengths and weaknesses. Do they match up?

ADMISSION PROCEDURE

Applications for Post 16 courses need to be sent directly to WMG Academy by the 31st January.

Students wishing to apply should follow the QR code on the website or on the front page of this booklet.

EVENTS

Once we have received your application, you will be invited to attend a number of events - 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 21ST AUGUST 2025

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

As part of your induction programme, you will be invited to join us in the summer term for an initial taster day and there is a bespoke induction programme at the beginning of the term in September 2025 when you join the academy. The aim of these days is to familiarise yourself with the academy, your chosen courses, 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.

T-LEVEL TECHNICAL QUALIFICATION IN DIGITAL PRODUCTION, DESIGN AND DEVELOPMENT

Awarding Body: Pearson
QAN 603/5832/4

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.

This T level is ideal if you are intending to progress directly to employment within the digital production, design and development sector in roles such as a Programmer, Web Designer, IT Business Analyst, Systems Designer, or Software Development Technician, to a digital apprenticeship or to further studies in digital.

This T Level has been developed in collaboration with employers, so the content meets the needs of industry and prepares you for work. It will provide the knowledge and experience needed to open the door to skilled employment, an apprenticeship or higher-level study.

CONTENT AND ASSESSMENT

T Level in Digital Production, Design and Development		
Technical Qualification, 1200 GLH		
Externally set, covering all core content	Core Examinations Knowledge, skills and understanding that go across the specification	A*-E
	Employer Set Project English, maths and digital skills for the route	
Externally assessed synoptic assessment	Occupational specialism Digital production, design and development	P, M, D, U
Industry placement (minimum 315 hours)		Additional qualifications required by industry

The core content covers the knowledge, understanding and application of contexts, concepts, theories and principles relating to the following areas:

1. Problem solving
2. Introduction to programming
3. Emerging issues and impact of digital
4. Legislation and regulatory requirements
5. Business context
6. Data

7. Digital environments
8. Security

The Employer Set Project is an externally assessed project completed over 14.5 hours. Students will need to draw on knowledge and understanding from across the core content in a synoptic manner, in order to effectively respond to a brief within a vocational context. There are five parts to the assessment, and the project outcomes form a portfolio of evidence.

This T level includes a single Occupational Specialist Component. The synoptic element of the project is important in order to ensure that students are able to demonstrate threshold competence. The Occupational Specialist Component consists of a number of activities grouped into four substantive tasks.

It will include a 315-hour industry placement that is related to the digital sector.

ENTRY REQUIREMENTS

At least five GCSEs at grade 5 and above which include both English and Maths at grade 5

ENGINEERING DIPLOMA - BTEC LEVEL 3

(Equivalent to 2 A Levels)

Awarding Body: Pearson

QAN: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 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 5 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 LITERATURE A-LEVEL

Awarding Body: OCR

Course Code: H427

QAN: 601/4725/8

OVERVIEW OF THE COURSE

The OCR A Level in English Literature qualification will build on the knowledge, understanding and skills established at GCSE, introducing learners to the discipline of advanced literary studies, and requires reading of all the major literary genres of poetry, prose and drama. The freedom within the non-exam assessment component allows learners to pursue more detailed work in a field of particular personal interest, offering excellent preparation for study at undergraduate level.

CONTENT AND ASSESSMENT

Component 1 - 2 hour and 30 minute closed text exam worth 40% of grade

- Drama and poetry pre 1900 - 'Oscar Wilde - An Ideal Husband' and 'Geoffrey Chaucer - The Merchant's Prologue and Tale'
- Shakespeare - Twelfth Night

Component 2 - 2 hour 30 mins closed text exam worth 40% of grade

- Close reading in chosen topic area
- Comparative and contextual study from chosen topic area - 'Oscar Wilde - The Picture of Dorian Gray'

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

- Close reading OR re - creative writing piece with commentary
- Comparative essay

ENTRY REQUIREMENTS

GCSE English 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: OCR

Course Code: H654

QAN: 603/1364/X

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 three 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 Numerical Methods, Further Mechanics, and Extra Pure as our optional 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; studying matrices is a great introduction to some of the concepts found in structural engineering and quantum mechanics; and studying differential equations will give them a good foundation in any of the many fields dealing with dynamic systems.

CONTENT AND ASSESSMENT

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

- Pure – Proof, Complex numbers, Matrices, Algebra and functions, Calculus, Vectors, Polar coordinates, Hyperbolic functions & Differential equations.
- Further Mechanics – Forces and Friction, Rigid Bodies, Energy, Impulse and Momentum, Centres of Mass, Dimensional Analysis
- Numerical Methods – Solving Equations Numerically, Numerical Integration, Numerical Differentiation, Rates of Convergence
- Extra Pure – Recurrence Relationships, Groups, Matrices, Multivariable Calculus

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

- Four written papers
 - 1 Pure paper – 144 marks, 2 hours 40 min
 - 3 Options papers – 60 marks, 1 hour 15 min each

ENTRY REQUIREMENTS

Grade 8 or above in GCSE Mathematics.

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: OCR

Course Code: H640

QAN: 603/1002/9

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.