

Year 10 Curriculum Booklet 2021-2022

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INTRODUCTION

We are very pleased to welcome your child to WMG Academy and are delighted that they have chosen to complete their KS4 study with us.

As part of the programme of study at the Academy, students will study a core curriculum of Maths, English Language, English Literature, Double Science and GCSEs alongside a Level 2 (GCSE equivalent) in Engineering Manufacture. Additional choices will complement the core programme of study by choosing three further option subjects. Currently, in addition Further Mathematics GCSE is offered as extension qualification to our most able Mathematicians.

On joining us at the age of 14, all students will complete baseline assessments to determine setting and target grades. This data will be made available for you at our 'settling in parents' evening in the early part of Year 10.

We look forward to working with you over the next two years and hope all students develop into young engineers of the future. We recognise that our students can only be successful if they continue to be supported by their parents throughout years 10 and 11. Please do not hesitate to contact us with any questions and we look forward to working together.

Best wishes,



Stewart Tait
Associate Principal

GUIDANCE ON PROGRAMME OF STUDY

The WMG Academy for Young Engineers understands the complexity of choosing your Key Stage 4 programme of study and has prepared the following support to assist you:

STEP 1: COMPLETE SUPPORTING DOCUMENTS AND SEND REPORT

As part of the offer pack that you have received, there are supporting documents for you to complete on the HEI admissions portal. The link for these documents will be sent via the HEI admissions portal and should be completed as soon as possible.

STEP 2: INVITED FOR A GUIDANCE MEETING

In the near future, you will be contacted via the HEI admissions portal about a guidance meeting to help you and your child select the appropriate options for next year and provide you with the opportunity to meet staff and ask any questions you might have. Please note that this meeting is currently likely to be remote via a video link.

STEP 3: CHOOSE OPTIONS

Please read through all of the course information within this booklet. Think about where you want to be in the future and find out what you need to do to achieve your aspirations and aims. Once you have thought through your option choices you will have the opportunity to select your subjects.

STEP 4: INVITED TO THE YEAR 10 INDUCTION DAY

In the summer term future Year 10 students will be invited into the Academy for an induction day. This is an opportunity to become familiar with the Academy, meet staff and other students and prepare for your start in September. Please note, all events are subject to the ongoing situation surrounding COVID-19.

STEP 5: JOINING THE ACADEMY

We look forward to welcoming you in September and hope you enjoy your experience at the WMG Academy.

AQA GCSE DESIGN AND TECHNOLOGY (PRODUCT DESIGN)

Awarding Body: AQA

Course Code: 8552

QAN: 603/0984/2

OVERVIEW OF THE COURSE

Our GCSE Design and Technology (Product Design) will prepare students to participate confidently and successfully in an increasingly technological world. Students will gain awareness and learn from wider influences on Design and Technology including historical, social, cultural, environmental and economic factors. Students will get the opportunity to work creatively when designing and making and apply technical and practical expertise. Our GCSE allows students to study core technical, designing, and making principles, including a broad range of design processes, materials techniques and equipment. They will also have the opportunity to study specialist technical principles in greater depth.

CONTENT AND ASSESSMENT

External Exam: (worth 50% of the final grade) 2 hours

Students will develop their knowledge and understanding of the areas of design technology and product design to include, Core Technical Principles, Specialist Technical principles and designing and making principles. These core skills will be assessed using a mixture of question styles including an extended response that will require the use of the skills learnt to generate ideas.

Coursework and practical assessment (worth 50% of the final grade)

Students will complete a substantial design and make task from a provided scenario following the design cycle of identifying and investigating design possibilities, producing a design brief and specification, generating design ideas, developing design ideas, realising design ideas and analysing and evaluating their final outcome. Students will respond by investigating and defining the needs and wants of the user using relevant research to produce a design brief and specification. Students will generate design ideas with flair and creativity and develop these to create a final design solution (including modelling). Students will also be required to manufacture a final prototype that is fit for purpose and a final evaluation.

AQA GCSE ART AND DESIGN (FINE ART)

Awarding Body: AQA
Course Code: 8202
QAN: 601/8088/2

OVERVIEW OF THE COURSE

Our GCSE ART and DESIGN course will allow students to develop knowledge and understanding through a variety of learning experiences and approaches, including engagement with sources. This will allow students to develop the skills to explore, create and communicate their own ideas. Students will demonstrate these skills through the development, refinement, recording, realisation and presentation of their ideas through a portfolio and by responding to an externally set assignment.

CONTENT AND ASSESSMENT

Portfolio (Component 1) Coursework module (worth 60% of final grade).

Each student will create and present a portfolio representative of their course of study. The portfolio will include a sustained project developed in response to a subject, theme, task or brief evidencing the journey from initial engagement with an idea(s) to the realisation of intentions. This will give students the opportunity to demonstrate, through an extended creative response, their ability to draw together different areas of knowledge, skills and/or understanding from across their course of study.

Students will also get an opportunity to create a selection of further work resulting from activities such as trials and experiments; skills-based workshops; mini projects; responses to galleries and museum visits; independent study and evidence of the student's specific role in any group work undertaken.

Students work is assessed over four assessment points.

Externally set assignment (Component 2) Preparatory period followed by 10 hour exam.

Students respond to a starting point provided by the exam board AQA. This response provides evidence of the student's ability to work independently within specified time constraints, realise intentions that are personal and meaningful and explicitly address the requirements of all four assessment objectives. Students will sit the 10 hour exam over two days.

GCSE BUSINESS

Awarding Body: OCR

Course Code: J204

QAN: 603/0295/1

OVERVIEW OF THE COURSE

GCSE in Business equips students with the skills and confidence to explore how different business situations affect decision-making. They develop their understanding of concepts, objectives and terminology, as well as the impact of contemporary issues on business operations. The qualification is linear, meaning that students will sit all their exams at the end of the two year course.

CONTENT AND ASSESSMENT

Paper 1 – 1 hour 30 minutes exam (out of 80 marks worth 50% of total GCSE)

Business Activity - In this section, students explore how and why businesses start and grow.

Marketing - In this section, students explore the purpose and role of marketing within business and how it influences business activity and the decisions businesses take.

People - In this section, students explore the purpose and role of human resources within business and how it influences business activity and the decisions businesses take.

Paper 2 – 1 hour 30 minutes exam (out of 80 marks worth 50% of total GCSE)

Operations - In this section, students explore what business operations involve, their role within the production of goods and the provision of services and how they influence business activity.

Finance - In this section, students explore the purpose of the finance function, its role in business and how it influences business activity.

Influences on business - In this section, students explore the importance of external influences on business and how businesses change in response to these influences.

The interdependent nature of business - In this section, students will need to use content of the above from both component to make connections between different elements of the subject. They will need to draw together knowledge, skills and understanding from different parts of the GCSE course and apply their knowledge to business decision making within a business context.

Both papers consist of a combination of multiple choice questions as well as a short, medium and extended response style questions. The short, medium and extended response style questions use stimulus material that draw on real business contexts.

GCSE COMPUTER SCIENCE

Awarding Body: OCR

Course Code: J277

QAN: 601/8355/X

OVERVIEW OF THE COURSE

Computer Science is engaging and practical, encouraging creativity and problem solving. It encourages students to develop their understanding and application of the core concepts in computer science. Students also analyse problems in computational terms and devise creative solutions by designing, writing, testing and evaluating programs.

CONTENT AND ASSESSMENT

Paper 1 – (worth 50% of the final grade) 1 hour 30 minutes exam.

- Systems architecture
- Memory and storage
- Computer networks, connections and protocols
- Network Security
- Systems Software
- Ethical, legal, cultural and environmental impacts of digital technology

Paper 2 – (worth 50% of the final grade) 1 hour 30 minutes exam.

- Algorithms
- Programming fundamentals
- Producing robust programs
- Boolean logic
- Programming languages and integrated development environments

Practical Programming

All students will be given the opportunity to undertake programming task(s), either to a specification or to solve a problem (or problems) during their course of study.

GCSE ELECTRONICS

Awarding Body: WJEC

Course Code: 4160 (4161, 4162, 4163)

QAN: 603/0776/6

OVERVIEW OF THE COURSE

Studying this GCSE in Electronics enables learners to develop scientific knowledge and conceptual understanding of the behaviour of analogue and digital electrical/electronic circuits including a wide range of electronic components. Develop an understanding of the nature, processes and methods of electronics as an engineering discipline to help them answer questions about practical circuits and be aware of new and emerging technologies. Develop and learn how to apply observational, practical, problem solving and evaluative skills in the identification of needs in the world around them and to propose and test electronic solutions.

CONTENT AND ASSESSMENT

Discovering Electronics: External Exam – 1 hour 30 minutes, 40% of the GCSE.

1. Electronic systems and sub-systems
2. Circuit concepts
3. Resistive components in circuits
4. Switching circuits
5. Applications of diodes
6. Combinational logic systems

Application of Electronics: External Exam – 1 hour 30 minutes, 40% of the GCSE.

1. Operational amplifiers
2. Timing circuits
3. Sequential systems
4. Interfacing digital to analogue circuits
5. Control circuits

Extended system design and realisation task – Coursework (Non-exam assessment, NEA) 20% of the GCSE.

This component requires each learner to produce a single extended system design and realisation task independently. The task builds on the systems developed throughout the specification and the requirement to relate practical circuit design and construction to knowledge and understanding gained from the examinations. This component requires learners, to demonstrate their ability to analyse a problem to enable solutions to be developed by developing a design specification to solve the problem, design and build an electronic system, model its performance against the design specification and modify as appropriate.

GCSE ENGLISH LANGUAGE

Awarding Body: AQA

Course Code: 8700

QAN: 601/4292/3

OVERVIEW OF THE COURSE

English Language is a linear course where students sit all of their exam papers at the end of Year 11. Students are introduced to fiction and non-fiction extracts that they will be asked to explore. One of the non-fiction extracts will be from the 19th century. This qualification will enable students to develop their analytical and creative skills whilst incorporating a variety of genres, audiences, viewpoints and perspectives. This course of study is at the heart of their learning journey and will equip them with a range of reading and writing skills that are valued by employers and colleges alike.

CONTENT AND ASSESSMENT

Paper 1 – Explorations in Creative Reading and Writing.

Written exam: (worth 50% of the GCSE) 1 hour 45 minutes.

Section A: Reading - One literature fiction text

Section B: Writing - Descriptive or narrative writing

Paper 2 – Writers' Viewpoints and Perspectives.

Written exam: (worth 50% of the GCSE) 1 hour 45 minutes.

Section A: Reading - One non-fiction text and one literary non-fiction text

Section B: Writing - Writing to present a viewpoint

Non Examination Assessment – Spoken Language.

(Students will receive a certificate of pass, merit or distinction).

Each student must complete an individual presentation on a subject of their choice in front of an audience.

AQA require these presentations to be filmed for moderation purposes.

Students also have to respond to questions and feedback.

Marked by teacher. All marks submitted and externally moderated and verified by AQA.

The spoken language aspect of the course does not contribute to the final GCSE grade but it is an essential requirement of the course that all students complete it.

All students receive a Pass, Merit or Distinction for this part of the course.

GCSE ENGLISH LITERATURE (taken in Year 10)

Awarding Body: AQA

Course Code: 8702

QAN: 601/4447/6

OVERVIEW OF THE COURSE

English Literature is a linear course where students sit all of their exams in the summer term of Year 10. Students will be introduced to a range of genres over time. It is an academic course of study, which will take students on a journey through the Elizabethan period to modern day poetry. This qualification will enable students to develop their critical thinking, analytical skills and a deeper understanding of the written word. It equips them with a range of reading and writing skills that are valued by employers and colleges alike.

CONTENT AND ASSESSMENT

Paper 1 – Shakespeare and the 19th Century Novel

Written exam: (worth 40% of GCSE) 1 hour 45 minutes.

Romeo and Juliet (Shakespeare)

The Sign of Four (Arthur Conan Doyle)

Section A: Shakespeare – Students will answer one question on the play. They will be required to write in detail about an extract from the play and then to link these ideas to the play as a whole. This essay is also marked for spelling, punctuation and grammar.

Section B: The 19th-century novel – Students will answer one question on their novel. They will be required to write in detail about an extract from the novel and then to write about the novel as a whole.

Paper 2 – Modern Texts and Poetry

Written exam: (worth 60% of GCSE) 2 hour 15 minutes.

An Inspector Calls (J.B Priestley)

Poetry Anthology (Power and Conflict) 15 poems linked by the theme of Power & Conflict

Section A: Modern texts – Students will answer one essay question from a choice of two on their studied drama text. This essay is also marked for spelling, punctuation and grammar.

Section B: Poetry – Students will answer one comparative question on one named poem (printed) on the paper and one other poem from their anthology cluster (not printed).

Section C: Unseen poetry – Students will answer one question on one unseen poem and one question comparing this poem with a second unseen poem.

GCSE GEOGRAPHY

Awarding Body: AQA

Course Code: 8035

QAN: 601/8410/3

OVERVIEW OF THE COURSE

Geography encourages students to 'think like geographers' by developing an enquiry approach to contemporary topics of study. This qualification integrates fieldwork and geographical skills into the content and assessments giving a holistic approach to the subject. The qualification is linear, and is assessed at the end of the course.

CONTENT AND ASSESSMENT

Paper 1 Living with the physical environment – (worth 35% of the final grade) 1 hour 30 minute exam.

- The challenge of natural hazards
- The Living World
- Physical landscapes in the UK
- Geographical skills

Paper 2 Challenges of the human environment – (worth 35% of the final grade) 1 hour 30 minute exam.

- Urban issues and challenges
- The changing economic world
- The challenge of resource management
- Geographical skills

Paper 3 Geographical applications – (worth 30% of the final grade) 1 hour 15 minute exam.

- Issue Evaluation – pre-release material ahead of the examination and questions on that material in the exam.
- Fieldwork based questions based on a fieldtrip organised in Year 10/11
- Geographical skills

There is not a coursework element on to this GCSE course. However, students will complete fieldwork over the course. At least 15% of the marks in the above exams for geography are based on what is learned through fieldwork.

GCSE MATHEMATICS

Awarding Body: EDEXCEL

Course Code: 1MA1

QAN:

OVERVIEW OF THE COURSE

In this course students will develop their knowledge and understanding of mathematical methods and concepts. You will use these to make connections and apply the functional elements of mathematics in everyday and real-life situations. In addition they will acquire and use skills such as problem-solving strategies, selecting and applying mathematical techniques and methods, mathematical reasoning, making deductions and inferences, drawing conclusions, as well as interpreting and communicating mathematical information in a variety of forms appropriate to the information and context.

CONTENT AND ASSESSMENT

The course content is split into six key subject areas:

- Number
- Algebra
- Ratio, Proportion and Rates of Change
- Geometry and Measures
- Probability
- Statistics

Assessment is in the form of externally assessed written exams, taken in the summer of Year 11, namely:

- Three written papers: each contributing 33.3% of the final grade.
- Tiered papers:
 - Foundation: Tier grades 1 - 5 available.
 - Higher: Tier grades 4 - 9 available.
- Each paper lasts 1 hour 30 minutes, with 80 marks on each paper.

GCSE 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, the management of money, further learning opportunities and career choices.

GCSE SCIENCE (COMBINED)

Awarding Body: OCR Gateway A

Course Codes: J250

QAN: 601/8687/2

OVERVIEW OF THE COURSES

Students taking combined science will study to achieve two full GCSEs over their two years of study. They will study a combination of Biology, Chemistry and Physics over two GCSEs. These qualifications are linear. Linear means that students will sit all their exams at the end of Year 11.

CONTENT AND ASSESSMENT

BIOLOGY	CHEMISTRY	PHYSICS
1. Cell level systems	8. Particles	15. Matter
2. Scaling up	9. Elements, compounds and mixtures	16. Forces
3. Organism level systems	10. Chemical reactions	17. Electricity and Magnetism
4. Community level systems	11. Predicting and identifying reaction products	18. Waves
5. Genes, inheritance and selection	12. Monitoring and controlling chemical reactions	19. Energy
6. Monitoring and maintaining health	13. Improving processes and products	19. Physics on the Move
7. Monitoring and maintaining the environment	14. Interpreting and interacting with Earth systems	20. Powering Earth

There are six examination papers: two biology, two chemistry and two physics. Each of the papers will assess knowledge and understanding from distinct topic areas. There is no coursework in science at GCSE. However, for each of the subjects, students are expected to be familiar with 12 required practicals. Questions will be asked about the practicals completed in lessons as part of the examinations.

GCSE SCIENCES (TRIPLE)

Awarding Body: OCR Gateway A

Course Codes: Biology J247, Chemistry J248 and Physics J249

QAN: 601/8589/2, 601/8663/X, 601/8651/3

OVERVIEW OF THE COURSES

Students taking triple science will achieve three full GCSE grades in Biology, Chemistry and Physics over their two years of study. They will gain further understanding and depth of knowledge compared to students choosing to take combined science, and will be at an advantage for further study. These qualifications are linear. Linear means that students will sit all their exams at the end of Year 11.

CONTENT AND ASSESSMENT

BIOLOGY	CHEMISTRY	PHYSICS
1. Cell level systems	8. Particles	16. Matter
2. Scaling up	9. Elements, compounds and mixtures	17. Forces
3. Organism level systems	10. Chemical reactions	18. Electricity
4. Community level systems	11. Predicting and identifying reaction products	19. Magnetism and magnetic fields
5. Genes, inheritance and selection	12. Monitoring and controlling chemical reactions	20. Waves
6. Monitoring and maintaining health	13. Improving processes and products	21. Radioactivity
7. Monitoring and maintaining the environment	14. organic chemistry	22. Energy
	15. Interpreting and interacting with Earth systems	23. Physics on the Move
		24. Powering Earth
		25. Beyond Earth

For each of the separate science GCSEs, students will sit two 1hr 45 minute papers. Each of the papers will assess knowledge and understanding from distinct topic areas. There is no coursework in science at GCSE. However, for each of the subjects, students are expected to be familiar with eight required practicals. Questions will be asked about the practicals studied in lessons as part of the examinations.

CAMBRIDGE NATIONAL ENGINEERING MANUFACTURE

Awarding Body: OCR

Course Code: J842 - R109/R110/R111/R112

QAN: 601/1219/0

OVERVIEW OF THE COURSE

Our Cambridge National in Engineering Manufacture develops students' understanding of the processes involved in transferring a design concept into a product. They apply their knowledge and skills by operating manufacturing equipment following a design specification, using tools such as CAD/CAM.

CONTENT AND ASSESSMENT

External Exam: (worth 25% of the final grade), 1 hour

R109: Engineering materials, processes and production – Students develop their understanding of a wide range of engineering materials and how their properties and characteristics impact on a design specification. They also examine different production processes and their applications.

The paper is usually broken up into 3 different areas:

- 1) Materials and properties with their uses.
- 2) Manual methods to form and fabricate highlighting the benefits of the process.
- 3) Modern Technologies such as CNC and Rapid Prototyping - focusing on benefits to quality, workforce and communications.

Coursework: worth 75% of the final grade consisting of 3 pieces of coursework

R110: Preparing and planning for manufacture – Students plan and apply appropriate processes to make pre-production product using hand-held tools, measuring and marking equipment safely. They then carry out a range of manually controlled machining operations and perform quality control checks to review their finished pre-production product

R111: Computer aided manufacturing – Students explore the role of computer applications in the design and manufacture of engineered products by creating computer-aided design (CAD) drawings to produce a batch of computer numerical control (CNC) manufactured examples of a product. They investigate methods used to compare items manufactured by manually controlled and CNC production, and develop their understanding of how computer control is used to produce engineered products in high-volume.

R112: Quality control of engineered products – Students develop their knowledge and understanding of the techniques and procedures used, including 'lean processes' to ensure the quality of engineered products. They produce and implement a detailed set of procedures for the quality control of engineered products in a 'real world' situation involving high-volume manufacture of products.

CAMBRIDGE NATIONAL CREATIVE I-MEDIA

Awarding Body: OCR

Course Code: J817

QAN: 601/8355/X

OVERVIEW OF THE COURSE

The Cambridge Nationals in Creative iMedia will equip students with a range of creative media skills and provide opportunities to develop, in context, desirable, transferable skills such as research, planning, and review, working with others and communicating creative concepts effectively. Through the use of these skills, students will ultimately be creating fit-for-purpose creative media products. The Cambridge Nationals in Creative iMedia will also challenge all students, including high attaining students, by introducing them to demanding material and techniques; encouraging independence and creativity and providing tasks that engage with the most taxing aspects of the National Curriculum.

CONTENT AND ASSESSMENT

Mandatory Units

Unit	Assessment Method
R081: Pre-production skills	Written paper OCR set and marked 1 hour 15 mins – 60 marks (worth 25% of final grade) Students answer all questions
R082: Creating digital graphics	Centre assessed tasks OCR moderated Approx 10 hours – 60 marks (worth 25% of final grade)

Optional Units

Unit	Assessment Method
R084: Storytelling with a comic strip	Centre assessed tasks OCR moderated Approx 10 hours – 60 marks (worth 25% of final grade)
R086: Creating a digital animation	Centre assessed tasks OCR moderated Approx 10 hours – 60 marks (worth 25% of final grade)

Unit R081: Pre-production skills : This unit will enable students to understand pre-production skills used in the creative and digital media sector. It will develop their understanding of the client brief, time frames, deadlines and preparation techniques that form part of the planning and creation process.

Unit R082: Creating digital graphics: The aim of this unit is for students to understand the basics of digital graphics editing for the creative and digital media sector. They will learn where and why digital graphics are used and what techniques are involved in their creation. This unit will develop students' understanding of the client brief, time frames, deadlines and preparation techniques as part of the planning and creation process

Unit R084: Storytelling with a comic strip: This unit will enable learners to understand the basics of comic strip creation. It will enable them to interpret a client brief, use planning and preparation techniques and to create their own comic strip using digital techniques. On completion of this unit, learners will be able to explore different genres of comic strip and how they are created, plan and create a comic strip to specific requirements, and review the final comic against a specific brief.

Unit R086: Creating a digital animation: This unit enables students to understand the basics of digital animation for the creative and digital media sector. Students will be able to plan a digital animation to a client brief, use animation software to create the animation and be able to store, export and review the final product.

BTEC LEVEL 2 AWARD IN ENGINEERING

Awarding Body: Edexcel
QAN: 603/0829/1

OVERVIEW OF THE COURSE

The Pearson BTEC Level 2 Tech Award in Engineering allows you to acquire technical knowledge and technical skills through vocational contexts by studying mechanical, electrical/electronic and engineering design as part of the qualification. The value of learning skills, knowledge and vocational attributes are recognised and will broaden the learners experience and understanding of the varied progression options available to them.

CONTENT AND ASSESSMENT

Internal Component

Component 1: Exploring Engineering Sectors and Design Applications - In this component, you will develop knowledge and understanding of the engineering industry, the interconnections within engineering sectors, and how these are integrated to enable organisations to find solutions to real-life problems. You will explore the role that design applications play in the production of engineered products. Through practical exercises, you will produce solutions to problems using different combinations of design and modelling engineering skills.

Component 2: Investigating an Engineering Project - In this component you will investigate the manufacture of an engineered product involving the design and the correct selection of materials, components and the making processes. You will acquire an understanding of the selection of materials, proprietary components, making processes and disassembly of a given engineered product. You will then plan, reproduce, inspect and test a single component.

External Component:

Component 3: Responding to an Engineering Brief - This external component requires learners to apply developed skills in problem solving, design and communication to enable them to respond to engineering briefs. For assessment, learners will be given a brief to carry out a practical set task before completing the three activities based on the practical task. An additional task, consisting of two activities, will target higher-order, planning, redesign and evaluative skills, and relate to independent scenarios.