

Y12 Curriculum Overview 2016-18

Subject	Exam Board			
BTEC Level 3 Diploma/Extended Diploma in Engineering	Pearson			
<p>Description: These qualifications are designed to be the substantive part of a study programme for learners wanting a strong core in a specialist engineering sector. Specialisations are available in Engineering, Electronic/Electrical, Mechanical, Computing, Manufacturing and Aeronautical Engineering. The BTEC courses actively encourage students to work independently and teachers are there to guide and facilitate learning. Some lessons are still delivered in a more traditional way due to their content, however great emphasis is out on independent guided tasks.</p> <p>BTEC Level 3 Diploma (120-credits) is broadly equivalent to two GCE A Levels. BTEC Level 3 Extended Diploma (180-credit) extends and deepens the specialist work-related focus from the Level 3 Diploma. There is potential for the qualification to prepare learners for appropriate direct employment in the vocational sector and it is suitable for those who have decided that they clearly wish to enter a particular specialist area of work. It is broadly equivalent to three GCE A Levels.</p> <p>Units:</p>				
	Unit	Unit Title	120 credit	180 credit
	1	Health and Safety in the Engineering Workplace		
	2	Communications for Engineering Technicians		
	3	Engineering Project		
	4	Mathematics for Engineering Technicians		
	5	Mechanical Principles and Applications		
	6	Electrical and Electronic Principles		
	7	Business Operations in Engineering		
	8	Engineering Design		
	9	Commercial Aspects of Engineering Organisations		
	11	Further Mechanical Principles		
	14	Applications of Thermodynamic Principles		
	15	Electro Pneumatic and hydraulic systems and devices		
	16	Engineering Drawing for Technicians		
	23	Welding Technology		
	25	Selecting and Using Programmable Controllers		
	28	Further Mathematics for Engineering Technicians		
	35	Principles and Applications of Electronic Devices and Circuits		
<p>Method of Assessment: All units are internally assessed in the BTEC qualifications in this specification. All assessment for the BTEC qualifications in this specification is criterion referenced, based on the achievement of specified learning outcomes. Each unit within the</p>				

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qualification has specified assessment and grading criteria which are to be used for grading purposes.

A summative unit grade can be awarded at pass, merit or distinction:

- to achieve a 'pass' a learner must have satisfied all the pass assessment criteria
- to achieve a 'merit' a learner must additionally have satisfied all the merit grading criteria
- to achieve a 'distinction' a learner must additionally have satisfied all the distinction grading criteria.
- Learners who complete the unit but who do not meet all the pass criteria are graded 'unclassified'.

Link to Specification:

http://qualifications.pearson.com/content/dam/pdf/BTEC-Nationals/Engineering/2010/Specification/9781446934647_BTEC_90c_L3_Eng_Iss4.pdf

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Subject	Exam Board
Mathematics	
AQA	
<p>Description:</p> <p>A-level Maths provides students with a thorough grounding in the mathematical tools and techniques often needed in the workplace. The logic and reasoning skills developed by studying A-level Maths make sure the qualification is widely respected even in non-mathematical arenas.</p> <p>A-level Maths is made up of six units – three at AS and three at A2. All units are available in the June series. There are four Pure Core units which make up two-thirds of the qualification and provide the techniques in Algebra, Geometry, Trigonometry and Calculus that form the fundamental building blocks of the subject.</p> <p>Mathematical applications make up the remaining third of the qualification and there are various options to suit the needs of individual students.</p> <p>The applications fall into three strands:</p> <ul style="list-style-type: none">• decision – networks, algorithms, sorting• mechanics – forces, energy, motion• statistics – probability, data handling, testing hypotheses. <p>Students can focus on one strand or study a mixture of any two.</p> <p>Knowledge/skills gained:</p> <ul style="list-style-type: none">• understanding of the mathematics that underpin many aspects of our lives• the ability to apply a range of mathematical skills to different situations• acute logical thinking and problem-solving abilities• the ability to process, interpret and analyse information. <p>A-level Maths provides a foundation for further studies in a variety of subjects including Science and Engineering.</p>	
<p>Method of Assessment:</p> <p>All units are of equal weighting and are assessed by an exam of 1 hour 30 minutes.</p> <p>Core 1</p> <p>All questions are compulsory. Calculators are not permitted.</p> <p>Core 2</p> <p>All questions are compulsory. A graphics calculator may be used.</p> <p>Mechanics 1B</p> <p>All questions are compulsory. A graphics calculator may be used.</p> <p>Core 3</p> <p>All questions are compulsory.</p> <p>A graphics calculator may be used.</p> <p>Core 4</p> <p>All questions are compulsory.</p> <p>A graphics calculator may be used.</p> <p>Mechanics 2B</p> <p>All questions are compulsory. A graphics calculator may be used.</p>	

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Link to Specification:

<http://filestore.aqa.org.uk/subjects/specifications/alevel/AQA-6360-W-SP-14.PDF>

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Subject	Exam Board
Physics	AQA
Description: <p>This specification ensures that the subject content is relevant to real world experiences and is interesting to learn. It can be a stepping stone to future study, across a wide range of disciplines, including science and engineering.</p> <p>Content areas:</p> <ul style="list-style-type: none">• Periodic motion• Thermal Physics• Practical skills and data analysis	
Method of Assessment: <p>This qualification is linear, which means that students will sit all the exams at the end of their A-level course.</p> <p>Paper 1 Periodic motion Written examination (2 hours - 85 marks)</p> <p>Paper 2 Thermal Physics Written examination (2 hours - 85 marks)</p> <p>Paper 3 Practical skills and data analysis Written examination (2 hours - 80 marks)</p>	
Link to Specification: http://filestore.aqa.org.uk/resources/physics/specifications/AQA-7407-7408-SP-2015.PDF	

Subject	Exam Board
Chemistry	AQA
Description: <p>This course comprises of mixture of physical, organic and inorganic chemistry. In the first year students will start off looking at the structure of the atom then move on to bonding and how elements and compounds interact. In the second year students will be learning thermodynamics, rate equations, and electrode potentials and many more enriching chemistry topics. There is a strong mathematical element to A Level Chemistry you will be learning to calculate moles, rates of reaction, Hess's Law and equilibrium constant K_p. Students will need to complete various practical skills assessment which focus on improving student's lab skills these range from making up a volumetric solution too measuring the EMF of an electrochemical cell.</p> <p>Subject content:</p> <ul style="list-style-type: none">• Physical chemistry	

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- Inorganic chemistry
- Organic chemistry

Method of Assessment:

This qualification is linear, which means that students will sit all the exams at the end of their A-level course.

Paper 1 Physical and Inorganic chemistry

Written examination (2 hours - 105 marks)

Paper 2 Physical and Organic chemistry

Written examination (2 hours - 105 marks)

Paper 3 Practical skills

Written examination (2 hours - 90 marks)

Link to Specification:

<http://filestore.aqa.org.uk/resources/chemistry/specifications/AQA-7404-7405-SP-2015.PDF>

Subject	Exam Board
Computer Science	AQA
Description:	
<p>Computer Science A-Level is for all students excited about learning how to code and how computers work.</p>	
<p>This course has a two unit structure that is delivered over two years. Students learn an exciting range of practical skills ready for their online Paper 1 exam in the second year of the course. Paper 1 has a heavy emphasis on coding skills using C#, as well as theoretical knowledge of programming, data structures, algorithms and computation. Paper 2 focusses on data representation, computer systems, architecture, databases, big data, problem solving, how a computer works and communication and networking. This is a paper-based exam also taken at the end of the second year of the course. Finally students complete a non-examined assessment similar to past coursework projects where students solve a problem, usually with a coding-based solution and produce a written project write up. This is completed at the end of the first year of the course.</p>	
Subject content:	
<ul style="list-style-type: none">• Fundamentals of programming• Fundamentals of data structures• Fundamentals of algorithms• Theory of computation	

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- Fundamentals of data representation
- Fundamentals of computer systems
- Fundamentals of computer organisation and architecture
- Consequences of uses of computing
- Fundamentals of communication and networking
- Fundamentals of databases
- Big Data
- Fundamentals of functional programming
- Systematic approach to problem solving
- Computing practical project

Method of Assessment:

This qualification is linear, which means that students will sit all the exams at the end of their A-level course.

Paper 1

On-screen examination (2 hours 30 mins – 40% of A Level)

Paper 2

Written examination (2 hours 30 mins - 40% of A Level)

Practical project

Non-examined assessment (20% of A Level)

Link to Specification:

<http://filestore.aqa.org.uk/resources/computing/specifications/AQA-7516-7517-SP-2015.PDF>

Subject	Exam Board
BTEC Level 3 Subsidiary Diploma in Information Technology	Pearson
Description: BTEC qualifications in this specification have been developed in the IT sector to: <ul style="list-style-type: none">• give education and training for IT employees• give IT employees opportunities to achieve a nationally recognised level 3 vocationally-specific qualification• give full-time learners the opportunity to enter employment in the IT sector or to progress to vocational qualifications such as the Pearson BTEC Higher Nationals in Computing and Systems Development• give learners the opportunity to develop a range of skills and techniques, personal skills and attributes essential for successful performance in working life.	

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The BTEC courses actively encourage students to work independently and teachers are there to guide and facilitate learning. Some lessons are still delivered in a more traditional way due to their content, however great emphasis is out on independent guided tasks.

BTEC Level 3 Subsidiary Diploma (60-credits) in IT is broadly equivalent to one GCE A Level.

Units:

- **Unit 1** Communication and Employability Skills for IT
- **Unit 2** Computer Systems
- **Unit 16** Procedural Programming
- **Unit 17** Project Planning with IT
- **Unit 34** Business Resources
- **Unit 42** Spreadsheet Modelling

Method of Assessment:

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A summative unit grade can be awarded at pass, merit or distinction:

- to achieve a 'pass' a learner must have satisfied all the pass assessment criteria
- to achieve a 'merit' a learner must additionally have satisfied all the merit grading criteria
- to achieve a 'distinction' a learner must additionally have satisfied all the distinction grading criteria.
- Learners who complete the unit but who do not meet all the pass criteria are graded 'unclassified'.

Link to Specification:

http://qualifications.pearson.com/content/dam/pdf/BTEC-Nationals/Information-Technology/2010/Specification/9781446934203_BTEC_90c_L3_IT_Iss3.pdf