

Getting Ready to Teach Pearson's new International Advanced Level IT specifications for first teaching in September 2018

17IBAN04



Aims and Objectives

- XX** Get an overview of the main changes in the new specification
- XX** Explore possible teaching and learning strategies that may be employed for the new specification
- XX** Look at Sample Assessments and Mark Schemes
- XX** Look at planning and organisation for the new specification
- XX** Explore the support and resources available from Pearson to guide you through teaching the new specification
- XX** Have the opportunity to network, discuss best practice and share ideas with other teachers.

Session Agenda

Timings are approximate and are given from the start of the 5 hour event:

- 10:00 Welcome and Introduction
- 10:10 Overview of the new specification
- 10:30 Explore teaching and learning strategies
- 11:30 Sample Assessment Material for Unit 1
- 12:30 Lunch
- 1:15 Sample Assessment Material for Unit 2
- 1:45 Sample Assessment Material for Units 3 and 4
- 2:45 Planning, organisation and support for the new specification
- 3:00 Networking, discussing best practice and sharing ideas
- 3:45 Close

Introduction to the Assessment

Content

The Pearson Edexcel IAS in Information Technology consists of two externally-examined units: Units 1 and 2.

The Pearson Edexcel IAL in Information Technology consists of four externally-examined units: Units 1 to 4.

Assessment Objectives / Skills Tested

AO1 Demonstrate knowledge and understanding of the concepts of Information Technology

AO2 Apply knowledge and understanding of the concepts of Information Technology

AO3 Analyse and evaluate Information Technology information and problems

AO4 Use analysis and evaluation to design solutions

Structure of Assessment

All units are externally assessed
Availability: June

Unit 1: 2-hour written examination

Unit 2: 3-hour examination, including practical and theoretical questions

Unit 3: 2-hour written examination

Unit 4: 3-hour examination, including practical and theoretical questions

Qualification Structure

The **Pearson International Advanced Level IT** specification replaces the Pearson International Advanced Level Applied ICT specification.

The Pearson Edexcel International Advanced Subsidiary in Information Technology (IAS) and the Pearson Edexcel International Advanced Level in Information Technology (IAL) **are modular qualifications**.

There are no optional units.

All units are externally assessed.

Qualification Structure

The Pearson Edexcel International Advanced Subsidiary in Information Technology

This qualification consists of two externally-examined units.

The International Advanced Subsidiary is the first half of the International Advanced Level qualification and consists of two IAS units: Unit 1 and Unit 2. This qualification may be awarded as a discrete qualification or may contribute 50 per cent to the International Advanced Level qualification.

The Pearson Edexcel International Advanced Level in Information Technology

This qualification consists of four externally-examined units.

The International Advanced Level consists of the two IAS units (Unit 1 and Unit 2) plus two IA2 units: Units 3 and 4. Candidates wishing to take the International Advanced Level must, therefore, complete all four units.

IAS Unit Content

IAS Unit 1	
Topic 1	Hardware and software
Topic 2	Networks
Topic 3	The online environment
Topic 4	IT systems
Topic 5	Data and databases
Topic 6	Wider issues
IAS Unit 2	
Topic 7	Understanding the functionality of HTML
Topic 8	Understanding the functionality of CSS
Topic 9	Understanding the functions of JavaScript
Topic 10	Designing web pages
Topic 11	The semantic web

IA2 Unit Content

IA2 Unit 3

Topic 12	Manipulating data
Topic 13	Enabling technologies
Topic 14	Using IT systems in organisations
Topic 15	Systems development
Topic 16	Emerging technologies

IA2 Unit 4

Topic 17	Use of features of database solutions
Topic 18	Relational database concepts
Topic 19	Database solutions

Assessment

Unit	IAS or IA2	Assessment information	Number of raw marks allocated in the unit
Unit 1	IAS	Externally assessed Written examination: 2 hours Availability: June First assessment: June 2019 80 marks	80 marks
Unit 2	IAS	Externally assessed Written examination: 3 hours Availability: June First assessment: June 2019 80 marks	80 marks
Unit 3	IA2	Externally assessed Written examination: 2 hours Availability: June First assessment: June 2020 80 marks	80 marks
Unit 4	IA2	Externally assessed practical examination Written examination: 3 hours Availability: June First assessment: June 2020 80 marks	80 marks

Assessment Objectives

Assessment objectives and weightings

		% in IAS	% in IA2	% in IAL
A01	Demonstrate knowledge and understanding of the concepts of Information Technology	24	10	17
A02	Apply knowledge and understanding of the concepts of Information Technology	40	36	38
A03	Analyse and evaluate Information Technology information and problems	10	14	12
A04	Use analysis and evaluation to design solutions	26	40	33

Teaching and Learning Strategies

Teaching and Learning Strategies

Teacher-led teaching and learning strategies	Teacher-led explanation
	Teacher-led discussion
	Practical demonstrations and workshops (to develop practical skills)
	Teacher-modelling e.g. processes and techniques, solutions to problems

Candidate-led teaching and learning strategies	Independent learning
	Problem-based learning e.g. scenarios, projects
	Work based learning
	Blended learning - combining classroom learning with structured independent learning e.g. online tutorials.

Topic 4: IT Systems

Understand	Be able to
the concept of an IT system	design IT systems, from individual components and sub-systems, to meet specified requirements
how to decompose a system into smaller sub-systems and components	interpret and create data flow diagrams for a given scenario
the concept of 'fitness for purpose' when evaluating systems.	interpret and create flow charts for a given scenario
the concept of and need for dataflow diagrams	
the concept of and need for flow charts	
the advantages and disadvantages of IT systems for individuals and organisations	
how a range of contemporary digital devices, peripheral devices, storage devices and memory are used in IT systems to meet the needs of individuals and organisations	

Unit 2: Content Mapping

Activity	Unit mapping
Using HTML and CSS, add a recipe to a web page using an ordered list. Include an appropriate image. Use HTML5 elements to add a caption to the image.	7.2.4 7.3.1 8.2.4 11.1.6
Create a contact form for a web page. Add form validation.	
Add a video to a web page using the HTML5 video element. The video is provided for you in different file formats.	
Using the wireframe provided, create a page template for the home page.	

Unit 9: Understanding the functions of JavaScript

Teacher-led classroom based activities	Teacher-led explanation
	Teacher-led discussion
	Practical demonstrations and workshops (to develop practical skills)
	Teacher-modelling e.g. processes and techniques, solutions to problems
Candidate-led independent learning	Independent learning
	Problem-based learning e.g. scenarios, projects
	Work based learning
	Blended learning - combining classroom learning with structured independent learning e.g. online tutorials.

Sample Assessment Material

Unit 1

IAS Unit 1		Unit code: WIT11/01	
Externally assessed		50% of the total IAS	25% of the total IAL
Written examination: 2 hours			
Availability: June			
First assessment: June 2019			
80 marks			

Assessment overview

- Candidates are assessed through a 2-hour written examination, set and marked by Pearson.
- Candidates must answer all questions.
- The examination paper may include multiple-choice, short-open, open-response and extended-writing questions.
- The examination assesses all assessment objectives.

Multiple-Choice Question

(ii) The speakers have a frequency response of $(\pm 3 \text{ dB})$ 60-25,000 Hz.

Identify the statement that correctly describes what this means.

(1)

- ☐ **A** The measure of the variation in volume for each frequency in the given range.
- ☐ **B** The margin of error for each measurement of frequency.
- ☐ **C** The number of times the speaker cones vibrate each second with an accuracy of ± 3 .
- ☐ **D** The total number of decibels needed to represent each individual frequency between the top and the bottom end.

Command word: State

Command Words	
Give/state/name	All of these command words are really synonyms. They generally all require recall of one or more pieces of information.

(d) The bank operates online only.

State **two** factors that prevent some people from using online banking services.

(2)

Question number	Answer	Mark
2(d)	<p>Award one mark any of the following up to a maximum of two marks.</p> <ul style="list-style-type: none">• Slow access speeds (1)• Poor literacy (1)• Poor digital skills (1)• Physical/mental disabilities (1)• Financial barriers (1)• Lack of internet access (1)• Lack of trust in the service (security scares) (1)	2

Command word: Describe

Command Words	
Describe	To give an account of something. Statements in the response need to be developed as they are often linked but they do not need to include justification or a reason.

- (c) The bank wants to introduce multi-factor authentication to control access to its computer systems.

Describe **one** way in which multi-factor authentication could be implemented.

(4)

Command word: Describe

Question number	Answer	Additional guidance	Mark
2(c)	<p>Award one mark for each descriptive point, up to a maximum of four marks for a linked description.</p> <ul style="list-style-type: none">• The employee logs onto the system using a username and password combination (1). This is followed by a text message (1) to the employee phone, giving a unique number/PIN (1), which the employee types into the system before being granted access (1)• The employee swipes a card (1) into a reader attached to a networked machine (1). The employee is presented with a screen to type in a user name and password (1). If both steps match those on file, then access is granted (1)• The employee swipes their finger (1) over a reader attached to a networked machine (1). The employee is presented with a set of security questions (1), like 'name of first pet' that must match those on file before gaining access (1)	<p>What the user knows (1) such as password, PIN, mother's last name, name of first pet, or other previously registered secret detail.</p> <p>What the user has possession of (1) such as a card, a phone, a dongle, a fob.</p> <p>User characteristics (1) such as a biometric signature, fingerprint, voice print, iris scan, face recognition.</p>	4

Command word: Explain

Command Words	
Explain	An explanation requires a justification/exemplification of a point. The answer must contain some element of reasoning/justification linked to a point/idea that has been identified.

An online-only bank needs to store large amounts of data about its customers. Each customer can generate many transactions every day.

(a) It is said that using cloud storage has financial benefits.

Explain **two** other reasons why the bank should use cloud storage.

(4)

Command word: Explain

Question number	Answer	Mark
2(a)	<p>Award one mark for a reason identified and one mark for justification/expansion up to a maximum of two marks for each response.</p> <ul style="list-style-type: none">• The responsibility for keeping the data safe and available by the host gives an extra level of assurance to the Bank (1) because the host has to implement appropriate disaster recovery procedures and maintenance of service (1)• It provides scalability/expansion (1) because new storage can be bought online (1)• There is no need to train personnel in the specialised technology needed (1) because technical details are taken care of by the host (1)	4

Command word: Draw

Command Words	
Draw	Produce a diagram/image using either a ruler or freehand. May require labelling/annotation to express meaning. Used when symbolic representations need to be manipulated.

- (b) Sometimes, customers leave without paying for the fuel. In order to stop this, the service station puts a camera and a motion sensor on each of the four pumps. The service station will have a date- and time-stamped photograph of all vehicles using the service station.

Draw a flow chart to describe this process.

(6)

Command word: Evaluate

Command Words	
Evaluate	Review information then bring it together to form a conclusion, drawing on evidence, including strengths, weaknesses, alternative actions, relevant data or information. Come to a supported judgement of a subject's qualities and relation to its context.

Dylan has found his first job in an IT department. He is deciding whether to join an online community of other IT professionals.

Evaluate the advantages and disadvantages of Dylan joining an online community for IT professionals.

(12)

Command word: Evaluate

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	1-4	<ul style="list-style-type: none">• Demonstrates limited knowledge and understanding, some of which may be inaccurate.• Applies understanding with limited coherence to produce a response that lacks development.• Demonstrates limited awareness of competing arguments. Conclusion, if present, is generic or unsupported.
Level 2	5-8	<ul style="list-style-type: none">• Demonstrates knowledge and understanding, which is mostly relevant and may include some inaccuracies.• Applies understanding to make some coherent connections and a partially developed response.• Demonstrates some awareness of competing arguments, but this may be unbalanced, and partially supports conclusion with evidence.
Level 3	9-12	<ul style="list-style-type: none">• Demonstrates accurate and relevant knowledge and understanding throughout.• Applies understanding coherently to produce a fully developed response.• Demonstrates an awareness of competing arguments and supports conclusion with evidence.

Unit 2

IAS Unit 2		Unit code: WIT12/01	
Externally assessed		50% of the total IAS	25% of the total IAL
Written examination: 3 hours			
Availability: June			
First assessment: June 2019			
80 marks			

Assessment overview

- Candidates are assessed through a 3-hour examination, including practical and theoretical questions, set and marked by Pearson.
- Each candidate will need to access a computer during the examination.
- Candidates must answer all questions.
- The examination paper may include short-open, open-response and extended-writing questions. Data files will be provided for some questions. Some responses will be written, others will involve the submission of files.
- The examination assesses all assessment objectives.

Command word: Amend

Command Words	
Amend	Requires changes/additions/deletions/rearrangement of a symbolic representation.

(b) Open the **Q03b.html** page in your editor.

There is an error in the JavaScript code that means it does not properly validate email addresses with more than one '@' symbol. For example, it gives the wrong result for the email 'someone@someone@somewhere.com'.

Amend the code to correct the error using a JavaScript iteration or loop.

Save the amended code as Q03bFINISHED.html

(5)

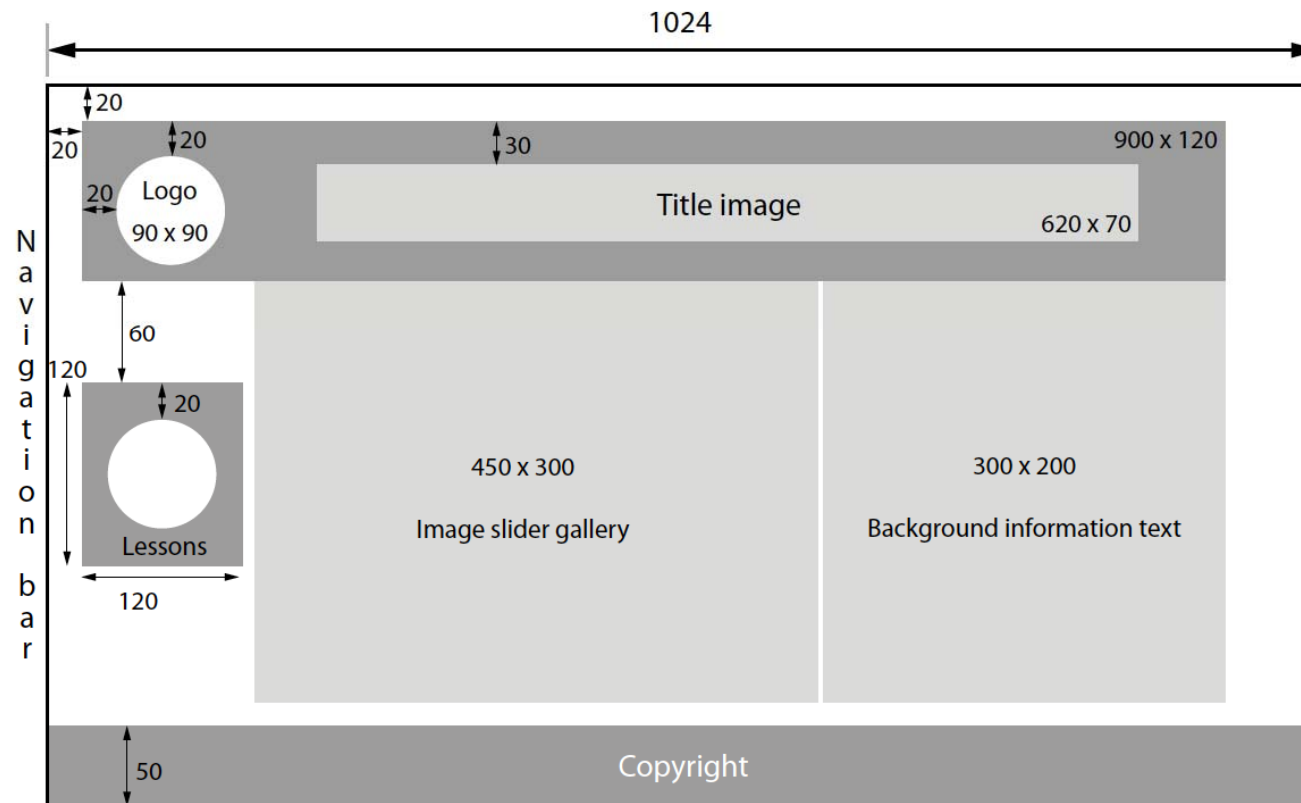
Command word: Amend

Question number	Answer	Mark
3(b)	<p>Award one mark for each of the following up to a maximum of five marks.</p> <ul style="list-style-type: none">• A total counter needs to be declared (1).• Each character in the string must be looked at (for) (1).• Each character must be compared to the @ symbol (1).• An additional test must be provided on the 'if' statement (1).• A functional solution (1). <p>Example</p> <pre>var atCount = 0; (1) var character = ""; for (var i=0; i<emailString.length; i++) { (1) var character = emailString.charAt(i); if (character == '@') { (1) atCount = atCount + 1; } } if ((atCount > 1)) (1)</pre>	5

Marking Activity

- 4 Topside Skateboarding is a retail outlet dedicated to skateboarding. It wants you to redesign its website. You must develop a sample web page using the wireframe provided below. All numbers are in pixels.

(16)



Unit 3

IA2 Unit 3		Unit code: WIT13/01	
Externally assessed		50% of the total IA2	25% of the total IAL
Written examination: 2 hours			
Availability: June			
First assessment: June 2020			
80 marks			

Assessment overview

- Candidates are assessed through a 2-hour written examination, set and marked by Pearson.
- Candidates must answer all questions.
- The examination paper may include short-open, open-response and extended-writing questions.
- The total number of marks available for the examination paper is 80.
- The examination assesses all assessment objectives.

Command word: Discuss

Command Words	
Discuss	Explore all aspects of an issue/situation/problem/argument by reasoning or argument.

A city is using the latest technologies to ensure a safer working environment for its employees and reduce the amount of pollution caused by motorists looking for car parking spaces.

- (a) The city has an extensive training programme for its emergency response teams. The city is considering using virtual reality in its training programme.

Discuss the advantages and disadvantages of using virtual reality in the training programme.

(6)

Command word: Discuss

Question number	Indicative content	Mark
3(a)	<p>Advantages in context:</p> <ul style="list-style-type: none"> • could save lives caused by accidents • could save time by having practised exact procedures • could save harm to the environment by understanding how to handle chemical spills • system could be reused to train additional teams of emergency responders • emergency personnel could be better trained by experiencing unique situations challenging to reproduce in real life. <p>Disadvantages in context:</p> <ul style="list-style-type: none"> • might be expensive if the procedure was a one-off, not to be repeated • would be expensive/costly to buy the best/high-end virtual reality hands-free kit • would not simulate the full experience of being in a dangerous situation because of smells or touch • the emergency response personnel could experience bad side-effects such as dizziness or nausea during the training. 	6

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	1-2	<ul style="list-style-type: none"> • Demonstrates limited knowledge and understanding, some of which may be inaccurate. • Applies understanding with limited coherence to produce a superficial and unbalanced discussion.
Level 2	3-4	<ul style="list-style-type: none"> • Demonstrates knowledge and understanding which is mostly relevant but may include some inaccuracies. • Applies understanding to make some coherent connections, leading to a discussion that shows some development, but may be unbalanced.
Level 3	5-6	<ul style="list-style-type: none"> • Demonstrates accurate and relevant knowledge and understanding throughout. • Applies understanding coherently to produce a balanced and fully developed discussion.

Command word: Draw

Command Words	
Draw	Produce a diagram/image using either a ruler or freehand. May require labelling/annotation to express meaning. Used when symbolic representations need to be manipulated.

- (b) The city has several multi-storey car parks. Each car park has many parking bays. Drivers, with smartphones, planning trips to the city are alerted to the location of car parks with free bays from an app. This information is relayed in real time and continuously updated. As the driver approaches the car park, the location of all the free bays in the area is relayed. When a driver takes a bay, it becomes occupied. When a driver leaves a bay, it becomes free. This information is monitored and processed at city central. The city tracks all the information about parking activities.

Draw an information flow diagram to show how this parking management system could be implemented using the Internet of Things.

Assume the driver is using the app in a safe, legal way.

(12)

Unit 4

IA2 Unit 4		Unit code: WIT14/01	
Externally assessed		50% of the total IA2	25% of the total IAL
Written examination: 3 hours			
Availability: June			
First assessment: June 2020			
80 marks			

Assessment overview

- Candidates are assessed through a 3-hour examination, including practical and theoretical questions, set and marked by Pearson.
- Each candidate will need to access a computer during the examination.
- Candidates must answer all questions.
- The examination paper may include short-open, open-response and extended-writing questions. Datafiles will be provided for some questions. All responses will be submitted using a word-processed candidate evidence template.
- The examination assesses all assessment objectives.

Scenario

Haroon works for a training company. The company provides training for small businesses around the country. The staff divide their time between working in the company's main office and visiting clients to deliver training.

When working in the office, the staff use desktop computers. The company has equipment, such as laptops and projectors, which staff can book out when needed. They can borrow equipment for between one and 14 whole days.

Haroon keeps a list of equipment in a single table within the database 'inventory'.

Haroon uses the 'loans' spreadsheet to keep a record of who has borrowed equipment.

Haroon is finding it increasingly difficult to keep track of equipment and wants a solution that will allow him to manage the equipment effectively and reduce the number of errors in record-keeping.

Command word: Develop

Command Words	
Develop	Produce a database solution based on given set of requirements, either by enhancing an existing data structure or creating new data structures based on given requirements and sample data sets.

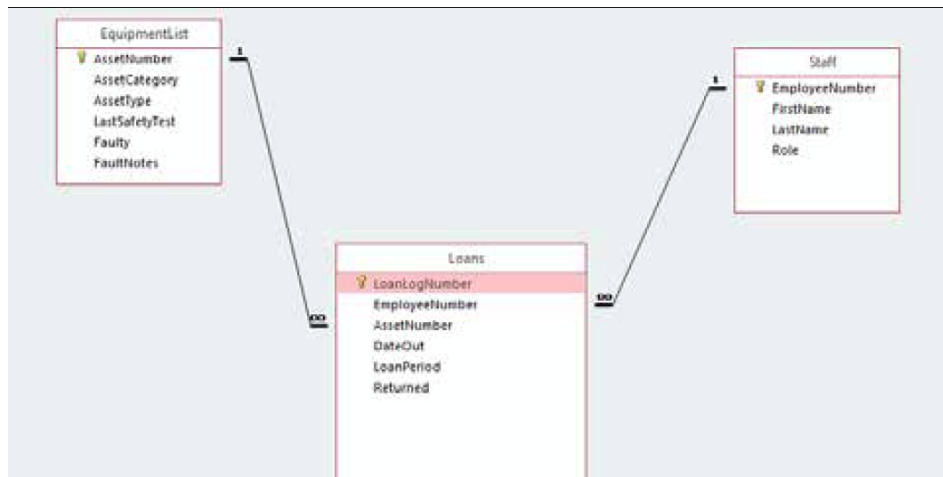
- (c) Haroon currently uses the Loans spreadsheet to keep a record of who has borrowed equipment. He wants to extend the inventory database so that it can be used for this purpose.

Develop the inventory database to add this functionality. You must create an efficient data structure that minimises data duplication, uses correct data types and primary keys, and enforces referential integrity.

Produce screen prints that clearly show relationships, table names, field names, data types and primary keys.

(9)

Command word: Develop



Loans	
Field Name	Data Type
LoanLogNumber	AutoNumber
EmployeeNumber	Number
AssetNumber	Number
DateOut	Date/Time
LoanPeriod	Number
Returned	Yes/No

General Lookup	
Field Size	Integer
Format	
Decimal Places	Auto
Input Mask	

General Lookup	
Field Size	Long Integer
Format	"Loan-Equip-"0000
Decimal Places	Auto
Input Mask	
Caption	
Default Value	0
Validation Rule	
Validation Text	
Required	No
Indexed	No
Text Align	General

Command word: Develop

Question number	Answer	Mark
1(c) Cont.	<p>Award one mark for each of the following components correctly shown in the screen prints up to a maximum of nine marks.</p> <ul style="list-style-type: none">• Use of appropriate field names and naming conventions (1)• Employee table AND Loans table is present (1)• 1:M relationship between Equipment – Loans (1)• 1:M relationship between Employee – Loans (1)• Appropriate Primary Keys used, e.g. Employee table – EmployeeNumber Loans Table – LoanLogNumber (1)• Autonumber or composite key used to generate a unique number of each loan (LoanLogNumber field) (1)• Date/time is used for DateOut (1)• Any integer data type is used for LoanPeriod (1)• Asset Number in Loans table displays in Loan-Equip-0000 format Asset number formatted correctly (1) (example to be added)	

Planning and Organisation

Planning

Compulsory content: as a minimum, all the topics in the content must be taught. The word ‘including’ in content specifies the detail of what must be covered.

The Assessments use a range of material and are not limited to the examples given. Teachers should deliver these qualifications using a good range of examples to support the assessment of the content.

Depth and breadth of content: teachers should use the full range of content and all the assessment objectives given in the subject content section.

Planning

Up-to-date content: questions in the first assessment series will use current practices and standards, for example HTML 5. However, to ensure that the specification is up to date, questions in later assessment series may use practices and standards that are developed over the lifetime of the specification. Details of any updated practices that we will use in questions, and when these questions will be set, will be given on our website.

Course of study

The structure of these qualifications allows teachers to construct a course of study that can be taught and assessed as either:


- distinct modules of teaching and learning with related units of assessment taken at appropriate stages during the course; or
- a linear course assessed in its entirety at the end.

Support and Resources

Support

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For more information, please contact subject advisors, subjects pages/communities and ask the expert.

[Click here to go to "Contact Us" Webpage](#)

Resources

We will provide:

- a **Getting Started Guide** to help you understand the scope and structure of content and assessment and how the planning and delivery can work for you and your students
- an editable **course planner** and **scheme of work**
- **teaching and learning resources** that promote any time, any place learning to improve student motivation and encourage new ways of working
- a range of resources to help you prepare your students for the assessments, including **examiner commentaries** following each examination series
- **training events.**

Other useful links

1. [Grade Boundaries](#)

This page shows the minimum marks needed to achieve a certain grade for all UK and international examinations. Also refer to the examiners report, which will be available for download with other documents.

2. [Examination Results Statistics](#)

Results statistics summarise the overall grade outcomes of candidates sitting Edexcel examinations.

3. [Results Plus](#)

- Edexcel's free online service giving instant and detailed analysis of your students' exam and mock performance.
- See your students' scores for every exam question.
- Understand how your students' performance compares with Edexcel national averages.

Considering Delivery Strategies and sharing best practice

1. Teaching Strategies.
2. Resources.
3. Technology.

Any questions?

**Thank you for
attending this event.**

How did we do?

*Please fill in the evaluation form that you'll
receive via e-mail in a few minutes.*

There's so much more to learn

Find out more about our range of events at
<http://qualifications.pearson.com/training>

ALWAYS LEARNING