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## Teaching Plan

### Unit 6: Forensic Science

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The following plan is based on 12 weeks at 5 hours per week (4 hours contact time + 1 hour directed study). The learning activities are suggestions only. Teachers may wish to develop alternative strategies. The plan should be read alongside the unit specification, and in particular the assessment evidence grid which for reference is reproduced at the end of this document.

Week number	Specification Unit Reference and Assessment Objectives	Suggested Learning Activities	Resources
1	6.2.1: Recording and collecting evidence (AO1a and c)	Teacher introduction possibly by use of a video. Candidates increase their knowledge through research and assignment work, writing reports on: <ul style="list-style-type: none"><li>• recording and preserving a crime scene so that the evidence is not compromised;</li><li>• ethics of evidence collection.</li></ul>	CSI videos or DVD etc. The Forensic Science World Pfizer <a href="http://users.bigpond.net.au/anzfss/ethics.htm">users.bigpond.net.au/anzfss/ethics.htm</a>
2	6.2.2: Collection and analysis of evidence using visual methods (AO1b, AO3a, b and c)	Teacher introduction on collecting evidence using visual methods as stated. Assignment based practical work on: <ul style="list-style-type: none"><li>• using “matching of patterns” e.g. fingerprints, footprints, tyre marks, tool marks, dental records.</li></ul>	The Forensic Science World Pfizer

Week number	Specification Unit Reference and Assessment Objectives	Suggested Learning Activities	Resources
3	6.2.2: Collection and analysis of evidence using microscopical methods (AO1b, AO3a, b and c)	<p>Teacher introduction on collecting evidence using microscopical methods as stated.</p> <p>Assignment based practical work on:</p> <ul style="list-style-type: none"> <li>• using a microscope for identification of e.g. fibres, pollen, hair, crystal structure.</li> </ul>	The Forensic Science World Pfizer
4 and 5	6.2.2: Collection and analysis of evidence using biological methods (AO1b, AO3a, b and c)	<p>Teacher introduction on collecting evidence using biological methods as stated.</p> <p>Assignment based work on:</p> <ul style="list-style-type: none"> <li>• research into analysis using body fluids i.e. D.N.A. analysis, blood;</li> <li>• practical on identification of insects/habitat of insects;</li> <li>• research on Immunological analysis and write up any points relevant to collection and analysis of evidence.</li> </ul>	<p>Video Advanced GNVQ</p> <p>Bio Rad kit</p> <p>CSI</p> <p>Cross reference to Unit 3 Blood test</p> <p>R.S.C. publication <i>Chemistry at the Races</i></p>
6 and 7	6.2.2: Collection and analysis of evidence using chemical methods (AO1b, AO3c)	<p>Teacher introduction on methods of chemical analysis. Practical assignment work on:</p> <ul style="list-style-type: none"> <li>• chromatography (possible practical on chromatographic separation of inks used in forgery cases;</li> <li>• analysis using I.R.;</li> <li>• qualitative analysis of unknown 'white</li> </ul>	<p>SATIS 16-19 Accident or Arson, Work done in 2.2.3</p> <p>Chemistry 1 C.U.P.</p> <p>Questions in Salters Chemistry .</p> <p>Work done in 2.2.1</p> <p>GNVQ Advanced Science</p> <p>practical folders Heinemann</p>

Week number	Specification Unit Reference and Assessment Objectives	Suggested Learning Activities	Resources
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8	6.2.2: Collection and analysis of evidence using physical methods (AO1b, AO3a, b and c)	Teacher led introduction followed by candidate assignment on: <ul style="list-style-type: none"> <li>analysis using Refractive Index of glass</li> </ul> or <ul style="list-style-type: none"> <li>practical involving soil analysis</li> </ul> or <ul style="list-style-type: none"> <li>written description of test firings for bullet comparisons.</li> </ul>	Standard physics texts CSI or CSI Miami videoed
9	6.2.3: Evidence and proof (AO2a)	Candidates research the evidence (in outline) used in an actual case. Discussion on the strengths and limitations of the evidence produced	e.g. O.J. Simpson case <a href="http://www.forensic-evidence.com">www.forensic-evidence.com</a>
10 and 11	6.2.1 and 6.2.2 and 6.2.3 Case Study (AO2a)	Teacher led introduction to the case study. Candidates complete assignment.	Assignment Brief 1 in this support pack (ASci_unit6_assignment1.pdf)
12	6.2.1 and 6.2.2 and 6.2.3	Work on completing portfolio evidence. Worksheet on suitable calculations may be needed for AO2b.	Assignment Brief 2 I this support pack (ASci_unit6_assignment2.pdf)

The assessment evidence grid from the unit specification is reproduced on the following pages.

Unit 6: Forensic science				
What you need to do:				
<p><b>You need to produce</b> evidence of your investigation into forensic science <b>[50 marks]</b>.</p> <p>This evidence needs to include:</p> <p><b>AO1:</b> a knowledge and understanding of the need to preserve and record the crime scene, and the chemical, biological and physical techniques used to collect and visualise forensic evidence safely, including ethical considerations <b>[21]</b>;</p> <p><b>AO2:</b> a report on a forensic case study on evidence and proof, including evidence of work which demonstrates the use of calculations to support forensic measurements or observations <b>[10]</b>;</p> <p><b>AO3:</b> at least <b>one</b> forensic analysis in <b>each</b> of the following areas:</p> <ul style="list-style-type: none"> <li>– visual/microscopical,</li> <li>– biological,</li> <li>– chemical,</li> <li>– physical <b>[19]</b>.</li> </ul>				
How you will be assessed:				
Assessment Objective	Mark Band 1	Mark Band 2	Mark Band 3	Mark Awarded
<b>AO1</b>	You will demonstrate a basic knowledge of the need to record and preserve the crime scene, giving some of the techniques used; <b>[0 1 2]</b>	you will demonstrate knowledge and understanding of the need to record and preserve the crime scene, describing a range of techniques used; <b>[3 4]</b>	you will demonstrate a thorough knowledge and understanding of the need to record and preserve the crime scene with a detailed description and explanation of a wide range of techniques used. <b>[5]</b>	
	Your work will show some information on how forensic scientists collect and visualise evidence safely using: chemical techniques; biological techniques; physical techniques; <b>[0 1]</b> <b>[0 1]</b> <b>[0 1]</b>	your work will show research and information on ways in which forensic scientists collect and visualise evidence, safely and appropriately, using: chemical techniques; biological techniques; physical techniques; generally, you will use appropriate scientific terms and conventions correctly; <b>[2]</b> <b>[2]</b> <b>[2]</b>	you will produce an in-depth research report showing understanding of a range of ways in which forensic scientists collect and visualise evidence, safely and appropriately, using: chemical techniques; biological techniques; physical techniques; you will understand the science behind these techniques and use appropriate scientific terms and conventions correctly. <b>[3 4]</b> <b>[3 4]</b> <b>[3 4]</b>	
	Your work will show a basic knowledge of ethical issues involved in retaining samples or data; <b>[0 1]</b>	your work will show a range of information on ethical issues related to forensic science; <b>[2 3]</b>	your work will show a range of relevant information on ethical issues in forensic science and an understanding of the need for an ethical code. <b>[4]</b>	
				<b>/21</b>

Unit 6: Forensic science (continued)				
Assessment Objective	Mark Band 1	Mark Band 2	Mark Band 3	Mark Awarded
AO2	Your report, based on a case study, will contain some information on evidence and proof including information on the strengths and limitations of some types of forensic evidence;  <b>[0 1 2]</b>	your report, based on a case study, will contain detailed information on evidence and proof which includes: – the ways in which forensic scientists ensure that the quality of evidence collected and analysed is objective; – strengths and limitations of the analytical techniques used and some interpretation of the probability of guilt;  <b>[3 4]</b>	your report, based on a case study, will contain researched and relevant detailed information on evidence and proof which includes: – the ways in which forensic scientists ensure that the quality of evidence collected and analysed is objective; – detail on limitations; – strengths and weaknesses of the analytical techniques used; – an understanding of the probability of guilt and of a need to review evidence. <b>[5 6]</b>	<b>/10</b>
	You will complete <i>straightforward</i> calculations on forensic data and you will sometimes obtain the correct solutions; <b>[0 1]</b>	you will complete <i>straightforward</i> calculations on forensic data and you will obtain the correct solutions; <b>[2 3]</b>	you will complete more <i>complex</i> calculations and you will obtain the correct solutions to an appropriate degree of accuracy. <b>[4]</b>	
AO3	You will safely carry out <b>one</b> forensic analysis in <b>each</b> of the <b>four</b> areas: – visual and microscopical; – biological and biochemical; – chemical; – physical;  <b>[0 1 2 3 4]</b>	you will carry out at least <b>one</b> forensic analysis in <b>each</b> of the <b>four</b> areas, safely and with some skill; you will use a range of techniques and equipment, repeat some measurements and work with an appropriate degree of accuracy;  <b>[5 6]</b>	you will carry out at least <b>one</b> forensic analysis, in <b>each</b> of the <b>four</b> areas, safely, skillfully, using different techniques; you will explain why you used the range of techniques and equipment and repeat measurements where appropriate; you will work with an appropriate degree of accuracy throughout. <b>[7 8]</b>	<b>/19</b>
	You will make and record at least <b>one</b> set of forensic observations or measurements in each area and display the data obtained;  <b>[0 1 2]</b>	you will make and record at least <b>one</b> set of appropriate forensic observations or measurements in each area, using some precision in your measurements, and display the data accurately in a range of ways; <b>[3]</b>	you will make and record at least <b>one</b> set of relevant forensic observations and measurements in each area, using the appropriate precision in your measurements, and you will display the data accurately in a range of ways. <b>[4 5]</b>	
	You will attempt to process and interpret some results in each of the <b>four</b> areas;  <b>[0 1 2]</b>	you will process and interpret your results in each of the <b>four</b> areas;  <b>[3 4]</b>	you will process and interpret your results in each of the <b>four</b> areas in detail, discussing their significance. <b>[5 6]</b>	
Total mark awarded:				<b>/50</b>