
Teaching Plan

Unit 3: Monitoring the Activity of the Human Body

The following plan is based on 12 weeks at 5 hours per week (4 hours contact time + 1 hour directed study). This unit is assessed by a 90 minute written paper. The learning activities are suggestions only. Teachers may wish to develop alternative strategies.

The following two statements from Section 3.2.6 of the unit specification are likely to be addressed best in the context of work in sections 3.2.1 to 3.2.5 inclusive and section 3.2.7.

- how to choose and evaluate relevant sources of data
- how to obtain and use primary and secondary data

Week number	Specification Unit Reference	Suggested Learning Activities	Resources
1	<p>3.2.2: Structure and function of the circulatory and respiratory systems</p> <ul style="list-style-type: none">• Describe the structure of the heart, the roles of the four chambers, the valves in double circulation, and the characteristic features of arteries, veins and capillaries.• Explain how heart rate is affected by nervous and hormonal inputs.• Explain how blood pressure changes with the activity of the body.	<p>Task 1 Teacher led instruction</p> <p>Task 2 Candidate research</p>	<p>Teacher generated 'Need to know sheet'. Should include the principles, facts etc. likely to be assessed based on the specification references.</p> <p>Worksheets for candidate tasks.</p>

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2	<p>3.2.2 Structure and function of the circulatory and respiratory systems</p> <ul style="list-style-type: none"> Describe the structure of the lungs, trachea and bronchial tubes, and how breathing movements are brought about by muscles. Explain how gases are exchanged between the atmosphere and the blood, through the respiratory surfaces of the lungs. Explain how oxygen and nutrients reach the cells within tissues, and how carbon dioxide is removed from the cells and from the bloodstream. 	<p>Task 1 Teacher led instruction</p> <p>Task 2 Candidate research</p>	Teacher generated 'Need to know sheet', worksheets for candidate tasks.
3	<p>3.2.1: Respiration in energy terms</p> <ul style="list-style-type: none"> Compare respiration and burning fuels. Describe the circulatory and respiratory systems as part of the respiration process. Explain why respiration is so important to the function of all cells in the body. State the differences between aerobic and anaerobic respiration in terms of substrates, products and quantity of energy made available to a respiring cell. Relate cellular respiration to what happens in a muscle cell during various levels of physical activity. 	<p>Task 1 Teacher led instruction</p> <p>Task 2 Candidate research</p>	Teacher generated 'Need to know sheet', worksheets for candidate tasks.

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	<ul style="list-style-type: none"> • Explain how monitoring a person's circulatory and respiratory systems and analysing their blood provides information about a person's state of health or fitness. 		
4	<p>3.2.4: Methods of taking physiological measurements</p> <p>3.2.3: Uses of physiological measurements</p> <p>3.2.3:</p> <ul style="list-style-type: none"> • Explain why you need to know the average values for the indicators that are regarded as 'normal' for male and female adults at rest <p>3.2.4:</p> <ul style="list-style-type: none"> • explain how to measure body temperature accurately • use graphs to monitor changes in temperature <p>3.2.3</p> <ul style="list-style-type: none"> • recognise the normal body temperature for an average adult at rest, the range that a healthy body can withstand, and body temperatures that are dangerously high or low 	<p>Task I Research based</p> <p>Task II Candidate research based Clinical thermometers – mercury and electronic</p> <p>Task III Assessment based Q(5) Jan 2005</p>	<p>Teacher generated: 'Need to know' sheets for each section and worksheets for candidate tasks.</p> <p>Teacher to supply photocopy of OCR AVCE Jan 2005 Q(5)</p>

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5	3.2.4 Methods of taking physiological measurements 3.2.3 Uses of physiological measurements 3.2.4 <ul style="list-style-type: none"> •Explain how to take pulse rate and /or heartbeat measurements •Assess a person's current level of fitness, and whether their performance is improving using pulse-rate measurements taken before, during and after exercising •Use graphs to monitor changes in pulse rate. 	Task I Practical	Teacher generated 'Need to know' sheets for each section and worksheets for candidate tasks Unit 3 Worksheets
	3.2.3 <ul style="list-style-type: none"> •State that an electrocardiogram can be used to monitor the activity of the heart •Recognise an electrocardiogram trace for a normal individual and describe what it shows •Recognise traces for normal heart, sinus tachycardia, bradycardia, sinus arrhythmia and ventricular fibrillation. 	Task II Candidate Research based	See Worksheet 3.1 in this support materials pack.
	3.2.3 <ul style="list-style-type: none"> •Describe what ECG traces show about the probable physiological status of people 	Task III Assessment Unit	See Worksheet 3.2 in this support materials pack.
			See Worksheet 3.3 in this support materials pack.

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6	Assessment	<p>Teacher led.</p> <p>Task 1 Specification review. Identify areas covered, revise essential content. Identify weaknesses, omissions.</p> <p>Task 2 Exam technique</p> <p>Task 3 Past paper questions</p> <p>Task 3 Peer assessment</p>	<p>Teacher generated worksheets for candidate tasks</p> <p>Photocopies of examination questions.</p>
7	<p>3.2.4: Methods of taking physiological measurements</p> <p>3.2.3: Uses of physiological measurements</p> <p>3.2.6: Regulations governing specific procedures and data management</p> <p>3.2.4</p> <ul style="list-style-type: none"> •Explain how to measure blood-pressure data using a manual sphygmomanometer or an electronic digital sphygmomanometer •Use graphs to monitor changes in blood pressure. <p>3.2.3</p> <ul style="list-style-type: none"> •Recognise normal values for blood 	<p>Task I Produce flyer to encourage people to have their blood pressure checked regularly.</p> <p>Task II Assessment Unit</p> <p>Task III Case study material.</p>	<p>Teacher generated 'Need to know' sheets for each section and worksheets for candidate tasks</p>

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	<p>pressure</p> <ul style="list-style-type: none"> Describe what blood pressure readings show about the probable physiological status of people. <p>3.2.6</p> <ul style="list-style-type: none"> How to carry out a risk assessment for any other non-invasive physiological measurement, e.g. blood pressure measurement, state what the hazards are, and explain how to minimise the risk from these hazards to the person being tested. 		
8	<p>3.2.4 Methods of taking physiological measurements</p> <p>3.2.3 Uses of physiological measurements</p> <p>3.2.4</p> <ul style="list-style-type: none"> Explain how to measure breathing rate Explain how to measure tidal volume and vital capacity of the lungs (using a simple spirometer) <p>3.2.3</p> <ul style="list-style-type: none"> State that a spirometer can be used to monitor the activity of the lungs Recognise a spirometer trace for a normal individual and describe what it shows Describe what spirometer traces show about the probable physiological status 	<p>Task I Practical – could be combined with pulse rate measurement AO3.1[See Assignment Brief 3.1.1]</p> <p>Task II Practical using spirometer</p> <p>Task III Assessment unit</p>	Teacher generated 'Need to know' sheets for each section, and worksheets for candidate tasks.

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	of people		
9	3.2.4: Methods of taking physiological measurements 3.2.3: Uses of physiological measurements 3.2.4: • Explain how to measure peak expiratory flow rate using a peak-flow meter 3.2.3: • State that a peak-flow meter can be used to monitor the activity of the lungs • Recognise the average values obtained for a normal individual using a peak-flow meter and describe what it shows • Describe what peak-flow meter readings show about the probable physiological status of people • State the principles of how breathing tests of, for example, tidal volume and peak flow rate are used in the treatment of asthma	Task I Practical Task II Research to produce a report on Asthma Task III Case study material	Teacher generated 'Need to know' sheets for each section and worksheets for candidate tasks
10	3.2.3: Uses of physiological measurements 3.2.6: Regulations governing specific	Task I Practical– counting yeast/Chlorella cells as 'substitutes' for blood cells.	Teacher generated 'Need to know' sheets for each section and worksheets for candidate tasks

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	<p>procedures and data management</p> <p>3.2.3:</p> <ul style="list-style-type: none"> •Describe how blood counts of, for example, red blood cells, can lead to diagnosis, e.g. anaemia •State the principles of how blood sugar monitoring is used in the treatment of diabetes •State the principles of how blood tests are used to find the following chemicals in the blood: alcohol; a named recreational drug; and a named performance-enhancing drug •State the principles of how blood tests, including ELISA tests, are used to find antibody indicators for, for example, hepatitis, AIDS. <p>3.2.6:</p> <ul style="list-style-type: none"> •Regulations for the disposal of hazardous biological waste, e.g. sharps and hypodermic needles used in obtaining blood for testing •Procedures for the treatment of material that may be contaminated with microbiological hazards, e.g. used petri dishes, materials from antibody testing •How to carry out a risk assessment for a blood test, state what the hazards are, and explain how to minimise the 	<p>Task II</p> <p>Research Case study –produce report</p> <p>Task III</p> <p>Research followed by Presentation, each group responsible for one of the listed factors</p> <p>Task IV</p> <p>Produce a survey of the ‘Test Packs’ that are readily available on the market to date.</p>	

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	risk from these hazards to the person carrying out the blood test.		
11	<p>Imaging methods</p> <p>3.2.7: Ethical issues related to monitoring, diagnosis and treatment</p> <ul style="list-style-type: none"> • Explain the basic principles of medical X-ray radiography • Describe how CAT scans and MRI scans are used for diagnosis • Explain the basic principles of how ultrasound scans are used in diagnosis • Distinguish between different types of medical scanner used in diagnosis to include X-ray, ultrasound, CAT and MRI • Discuss the risks, benefits and ethical issues involved in using imaging methods • Identify the risks and benefits arising from the diagnosis and/or treatment of patients with circulatory or respiratory disorders • Identify situations where it may be considered inappropriate to diagnose and or treat patients. 	<p>Task I</p> <p>Research followed by a presentation, each group responsible for one of the listed methods</p> <p>Task II</p> <p>Produce a poster and an accompanying pamphlet, for Key Stage 3 pupils, describing the different imaging methods currently in use</p>	<p>Teacher generated 'Need to know' sheets for each section and worksheets for Candidate Tasks</p> <p>'Imaging Methods – Information Pack' on this CD-ROM.</p>

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12	Assessment	<p>Teacher led</p> <p>Task 1 Specification review. Identify areas covered, revise essential content. Identify weaknesses, omissions.</p> <p>Task 2 Exam technique</p> <p>Task 3 Past paper questions</p> <p>Task 3 Peer assessment</p>	<p>Teacher generated worksheets for candidate tasks</p> <p>Photocopies of examination questions.</p>