## Learning Outcomes

<table>
<thead>
<tr>
<th>The student should be able to</th>
<th>Assessment Criteria</th>
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</thead>
<tbody>
<tr>
<td>1. Understand the structure and function of the Cardiovascular system</td>
<td>1.1 Describe the structure of the Cardiovascular system including Heart, Arteries, Veins, Capillaries and Blood</td>
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<td>1.2 Describe the functions of the main components of the Cardiovascular system</td>
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<tr>
<td>2. Understand the structure and function of the Respiratory system</td>
<td>2.1 Describe the structure of the Respiratory system</td>
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<td>2.2 Describe the functions of the main components of the Respiratory system</td>
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<tr>
<td>3. Understand the processes involved in Energy release; aerobic and anaerobic</td>
<td>3.1 Describe the role of the Cardio-Respiratory system within the energy-release process</td>
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<td>3.2 Explain the role of fuel (Glucose) within the energy-release process</td>
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<td>3.3 Explain the process of Aerobic Respiration, including; Glucose, ATP and waste products</td>
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<td>3.4 Explain the process of Anaerobic Respiration, including; Glucose, Lactic Acid and Oxygen Debt</td>
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<td>3.5 Distinguish between sporting activities that would use Aerobic and those that would use Anaerobic Respiration</td>
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</tbody>
</table>

## Assessment Methodology

A formal unseen two hour written examination

## Grading of this unit

The following grade descriptors will be applied to the assessment of this unit:

1. Understanding of the subject
2. Application of Knowledge
3. Application of Skills
4. Communication and Presentation
5. Autonomy and/or Independence
6. Quality

Please refer to the QAA Grade Descriptors for detail of the components of each descriptor
## Indicative Content

### Learning Outcome 1

Structure: heart (endocardium, myocardium, epicardium, atria, ventricles, bicuspid valve, tricuspid valve, aortic valve, pulmonary valve, aorta, superior and inferior vena cava, pulmonary vein, pulmonary artery); blood vessels (arteries, arterioles, capillaries, veins, venules), vasodilation, vasoconstriction; blood (composition – plasma).

Function of the cardiovascular system: delivery of oxygen and nutrients; removal of waste products; thermoregulation; function of blood (oxygen transport, clotting, fighting infection); cardiac cycle (sino atrial node (SAN), atrio ventricular node (AVN), atrio-ventricular bundle – Bundle of His, Purkinje fibres); effect of the nervous system (sympathetic and parasympathetic).

### Learning Outcome 2

Structure: nasal cavity; epiglottis; pharynx; larynx; trachea; bronchus; bronchioles; lungs (lobes, pleural membrane, pleural cavity, parietal pleura, thoracic cavity, visceral pleura, pleural fluid, alveoli); diaphragm; intercostal muscles (external and internal).

Function: transport, eg oxygen, carbon dioxide, haemoglobin, oxy-haemoglobin; mechanisms of breathing (inspiration and expiration, respiratory volumes – tidal volume, inspiratory reserve volume, expiratory reserve volume, vital capacity, residual volume, total lung capacity); control of breathing (neural control, chemical control).

### Learning Outcome 3

Exercise: aerobic; anaerobic.

Energy system responses: adenosine triphosphate production; creatine phosphate and lactic acid system; anaerobic glycolysis, mitochondria; Krebs cycle; electron transport chain.

Fatigue: Aerobic and Anaerobic: depletion of energy sources, eg creatine phosphate, muscle and liver glycogen; effects of waste products, eg blood lactate accumulation, carbon dioxide, increased acidity.

Sports Activities: Anaerobic: Explosive activities-Athletics track and field- sprint, throwing, jumping events, Golf swing, tennis serve, cycle sprint track, BMX and road.

Aerobic Activities: Long distance swimming, running, cycling, walking. Importance of aerobic base for all sports.

### Validation end date: 31 August 2019