

SUBJECT:  
A-LEVEL PE (A&P)



NESTON  
HIGH SCHOOL

KS5 CURRICULUM PLAN  
2020-21

KS4 Knowledge and key skills: Body systems in action; cardiovascular system, respiratory system, muscle fibre types, Musculo-skeletal system (joint actions and planes/axis of movement), muscle contraction - isotonic and isometric and energy systems. Knowledge of these areas is important and being able to apply this knowledge to sporting situations to explain why it will be useful for particular athletes is expected. Use of command words such as justify, discuss and analyse - knowing what the command words are and what the examiner is asking for.

YEAR 12	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
TOPIC						
<b>Knowledge</b>	<p>Cardiovascular system Structure and Flow of blood through the heart. Factors affecting the change in rate of the C.C.S. Neural &amp; Hormonal responses to exercise. Receptors involved. Definition and impact SV,HR, CO. Impact of PA on health &amp; fitness of individual. Cardiovascular drift. Blood vessels. Blood pressure Venous return mechanisms - Starlings law. Oxygen transportation and impact. Oxy-Hae diss curve. Bohr shift. Redistribution of blood.</p>	<p>Respiratory system To be able to understand Lung Volumes &amp; interpret a Spirometer trace. Understand Gaseous Exchange- At Alveoli/ At Muscles. Recap Gaseous exchange. How do we regulate ventilation. Sympathetic &amp; Parasympathetic nervous system - how they respond to exercise. Receptors involved. Impact of poor lifestyle on the respiratory system and health and fitness of individual</p>	<p>Neuromuscular system Characteristics and functions of muscle fibre types. Nervous system – Sympathetic and parasympathetic links to initiate movement. Role of Proprioceptors in PNF. Learning the specific proprioceptors; Muscle Spindles and Golgi Tendon Organ. How the body recruits muscle fibres to allow movement and the strength of contraction. Motor units and the role they play in movement.</p>	<p>Musculo-skeletal system Joint actions in specific planes and axes. Learning the types of joint and the Articulating bones at these joints. Main Agonists and antagonists that work together to allow movement to occur. Types of muscle contraction- Isotonic (Concentric &amp; Eccentric) and Isometric.</p>	<p>Energy Systems Understand how energy is transferred in the body; Aerobic energy system (Glycolysis, Krebs cycle, Beta Oxidation, Electron transport chain) for long duration/low intensity exercise - with consideration to Max/Sub max oxygen deficit and EPOC. Anaerobic energy systems (ATP-PC, Anaerobic glycolytic system) Understand Lactate producing capacity/ sprint power when using High Intensity/short duration exercise. To understand the Energy continuum- Intensities &amp; duration</p>	<p>NEA Coursework Introduction to the NEA written coursework. To start the analysis section of the chosen weaknesses and applying as much analytical detail as possible in terms of breaking down the weakness to have a greater understanding of why it is a weakness.</p>
<b>Skills</b>	<p>Applying knowledge of the factors that affect the changes on heart rate and apply to sporting situations. Analyse the impact of physical activity on the health and fitness of an individual. Build up confidence using AO2 applying skills to exam questions. Interpreting data graphs/tables to help explain deeper understanding of knowledge.</p>	<p>Able to interpret a spirometer trace graph and use that information to explain the changes in breathing with exercise. Apply knowledge of the nervous systems that help to explain why these changes occur in differing sporting situations. Analyse the impact of poor lifestyle choices and discuss why these have such an impact on the heart and lungs.</p>	<p>Able to explain and analyse the use of muscle fibre types and apply to sporting situations. Apply the knowledge of the proprioceptors to explain how the force of contraction can change by initiating the sympathetic and parasympathetic nervous systems. Linking these theories to a range of sporting actions and situations.</p>	<p>Identify and Analyse the body movements of a range of particular sporting actions. Justify why these actions can be classified as these planes and axes.</p>	<p>Analyse and evaluate the use of the different energy systems with differing intensities and durations. Interpreting energy system graphs to explain the energy continuum in terms of intensities and duration.</p>	<p>Apply analytical content to break down the skills for their own sports.</p>
<b>Key Vocab</b>	<p>Cardiac conduction system. Chemoreceptors. Baroreceptors. Proprioceptors. Stroke volume. Heart rate. Cardiac output. Cardiovascular drift. Venous return mechanisms. Starlings law. Bohr shift. Vasoconstriction. Vasodilation. Oxy-hemoglobin dissociation curve.</p>	<p>Spirometer trace. Gaseous exchange. Chemoreceptors. Baroreceptors. Proprioceptors.</p>	<p>Slow twitch (Type 1) Fast glycolytic (Type 11x)Fast Oxidative Glycolytic (Type 11a). Sympathetic/parasympathetic nervous system. PNF. Muscle spindles. Golgi Tendon organ. Spatial summation/Wave summation/All or none law/Tetanic</p>	<p>Sagittal plane/Transverse axis. Frontal plane/Sagittal axis. Transverse plane/Longitudinal axis. Articulating bones. Isotonic and Isometric</p>	<p>Aerobic. Glycolysis. Krebs cycle. Beta oxidation. Electron transport chain. Oxygen deficit. EPOC. Anaerobic. ATP-PC. Anaerobic glycolytic. Lactate threshold. OBLA.</p>	<p>Analysis. Weaknesses.</p>
YEAR 13	SUMMER 2	SUMMER 1	SPRING 2	SPRING 1	AUTUMN 2	AUTUMN 1
TOPIC						
<b>Knowledge</b>	Exam period	Revision for exams	Revision for exams	<p>Preparation &amp; training methods. Physiological effects of a warm up and cool down on the body. Understanding the principles of training and how you can apply them to a training programme. Understanding the training year and the principles of periodisation. The training methods needed to improve physical health and fitness. Injury prevention and rehab. Types of injury that can occur and how you can prevent them.</p>	<p>Diet and nutrition. Nutrients needed for the body to function efficiently; Carbohydrates, fibre, fat, protein, vitamins, minerals, water. Dietary supplements and the manipulation of diet to aid performers - looking at the positive and negative effects. Key data terms for laboratory conditions and field tests.</p>	<p>Biomechanics. Understanding of the biomechanical principles needed for sporting actions. Know the 3 different lever systems. Newtons laws of motion. Principles of linear motion in regards to sporting actions. Angular and projectile motion of both athletes and objects. Fluid mechanics - Drag and lift force and an understanding of Bernoulli's principle.</p>
<b>Skills</b>				<p>Identify, Apply, Explain and Evaluate the use of methods of training to improve physical fitness. Identify acute and chronic injuries. Understand the importance of screening, warm ups, flexibility, taping and bracing are used in injury prevention. Describe and evaluate the types of rehabilitation training techniques that can be used to aid an injured performer.</p>	<p>Identify, describe and evaluate the use of nutrients to manipulate diet for particular athletes dependent on their needs. Evaluate the positive and negative effects of glycogen loading, creatine monohydrate, sodium bio-carbonate and caffeine on a performer.</p>	<p>Application of command words to help identify, define, explain and analyse the biomechanical content. Explain and interpret force-time graphs. Be able to explain Bernoulli's principle in relation to upward lift for a discus throw and a downward lift for racing cars, cyclists and speed skiers.</p>
<b>Key Vocab</b>				<p>Specificity. Progressive overload. Reversibility. Recovery. FITT Principles. Periodisation. Macrocycle. Mesocycle. Micro cycle. Tapering. Peaking. Continuous. Fartlek. Interval. Circuit. Weight. PNF. Acute injuries. Chronic injuries. Screening. Proprioceptive. Hyperbaric chambers. Cryotherapy. Hydrotherapy.</p>	<p>Glycogen loading. Creatine monohydrate. Sodium bicarbonate. Caffeine. Objective. Subjective. Validity. Reliability. Quantitative. Qualitative.</p>	<p>Newton's laws of linear motion. Inertia. Acceleration. Action/reaction. Stability. Levers. Mechanical advantage &amp; disadvantage. Velocity. Linear motion. Impulse. Angular momentum. Projectile motion. Bernoulli's principle.</p>

Key Knowledge Transfer: Basic knowledge of AO1, AO2 AND AO3 examination technique. Building up of techniques used to answer 8 and 15 mark questions.