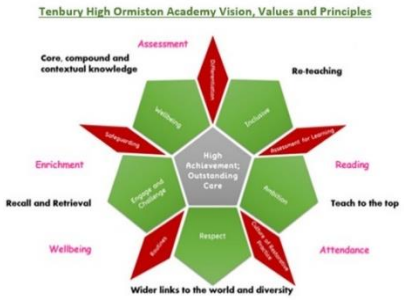
TENBURYHIGH
ORMISTON ACADEMY



Curriculum Overview for Biology
Year 10

Half Term 1: Organisation (unit 2) and Infection and Response (unit 3)and Bioenergetics (unit 4)

Substantive Knowledge unit 2:

- ❑ Hierarchical system: cells, tissues and organs

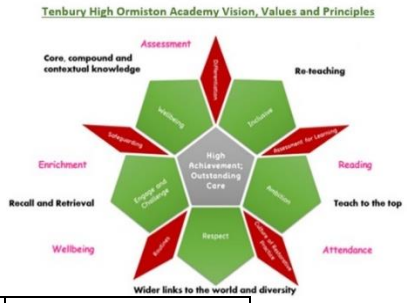
Organ systems

- ❑ Digestive
- ❑ Practical – food tests
- ❑ Enzyme mechanism and activity
- ❑ Practical into enzyme activity (temperature and pH)
- ❑ The heart structure and function
- ❑ The lungs structure and function
- ❑ The circulatory system
- ❑ Composition of blood
- ❑ Lifestyle factors and their links to disease
- ❑ Coronary heart disease and its treatment
- ❑ Cancer and its risk factors

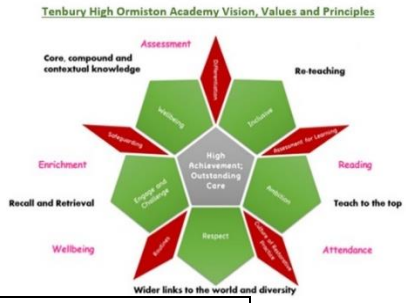
Substantive Knowledge unit 3:

- Communicable diseases – Spread methods, reduction and prevention, reproduction.
- Viral diseases – Measles, vaccinations, HIV and the immune system, Tobacco mosaic virus and impact on plants.
- Bacterial diseases – Salmonella effects and causes, Gonorrhoea treatment, causes, spread.
- Fungal diseases – Rose black spot effects and treatment.
- Protist diseases – Malaria spread and prevention.
- Human defence – Non-specific and WBCs.
- Vaccination – How it works, why we do it.
- Antibiotics and painkillers – Use, how they work, fact that painkillers don't kill pathogens.
- Monoclonal antibodies (Triple) – Production, use, benefits.
- Plant disease (Triple) – Detection methods, identification, infection types, effects.

Cell
Tissue
Organ
Organ system
Organism
Epithelial
Muscle
Glandular
Enzyme
Substrate
Active site
Denature
Lock and key
Complimentary
pH
Independent variable
Dependent variable
Control variable
Circulatory
Double circulatory system
Pulmonary
Artery
Vein
Capillary
White blood cell
Red blood cell
Platelet
Plasma
Coronary
Risk factor
Malignant
Metastasize
Benign
Epithelial
Palisade
Spongy mesophyll
Guard cell
Stomata
Waxy cuticle
Xylem
Phloem
Transpiration



Disciplinary Knowledge unit 2: ❑ Rates of reaction calculations ❑ Plan practical investigations, collect and analyse data to form conclusions ❑ WS1. 2 Use a model to explain enzyme action ❑ WS 3.5 explain adaptations of blood cells in relation to their function. ❑ WS 1.3 and 1.4 Evaluate methods of treatment bearing in mind the benefits and risks associated with the treatment ❑ WS 1.4 and 1.5 Interpret data about risk factors for specified diseases including impact at local, global and national levels ❑ AT 7 Observation of a transection of a leaf ❑ AT 6 and 7 investigate the distribution of stomata and guard cells **Disciplinary Knowledge unit 3:** • Drug discovery and development – Plants and microorganisms, pharma industry synthesis, trials and testing. The importance of testing • Analysis of graphical data – antibody levels • Process of identifying plant disease			Triple only: Monoclonal antibody Hybridoma Diagnose Deficiency Nitrate Magnesium Physical barrier Chemical defence Mechanical defence
			
			
Half Term 2: Bioenergetics **Substantive Knowledge:** • Photosynthesis reaction • Rates of reaction for photosynthesis • Limiting factors of photosynthesis • Investigating rates of photosynthesis • How plants use glucose • Aerobic and anaerobic respiration • Impact of exercise on respiration • Metabolism **Disciplinary Knowledge:** • Describing chemical reactions			
			Photosynthesis Chlorophyll Oxygen Carbon dioxide Reaction Rate Limiting factor Variable Accurate Trend Insoluble Glucose



• Writing word and symbol equations • Balancing symbol equations • Graph analysis • Calculating rates of reaction • Higher tier: calculating rates using a tangent on a graph • Required practical: investigating rates of photosynthesis		Respiration Aerobic Anaerobic Lactic acid Muscle Fatigue Oxygen debt Metabolism Enzyme Energy