

## KS4 Curriculum Overview (GCSE BIOLOGY)

### YEAR 10

#### Year 1 GCSE/BTEC Option Subjects

TERM 1 TOPIC/s	*Key Skills/Subject Links	*Career links & BV
<b>Disease and bioenergetics:</b> <b>B5</b> Communicable diseases (continued) <b>B6</b> Preventing and treating disease (continued) <b>B7</b> Non-communicable diseases	<p>Interpreting graphs; correlation and cause.</p> <p>Growing bacteria on agar plates.</p> <p>Investigating and calculating the effect of disinfectants and antibiotics on bacterial growth.</p> <p>Stages involved in testing and trialing new drugs.</p> <p>Evaluate the effect of lifestyle choices on diseases such as obesity, cancer and COPD.</p> <p><b>History Link</b> – History of medicine.</p> <p><b>Health and Social care Link</b> – Smoking and pregnancy.</p>	<p><b>Career links</b></p> <p>Health Sector e.g., doctor, public health nurse, microbiologist, pharmaceutical industry, drug development.</p> <p><b>British values</b></p> <p><b>Mutual Respect and Tolerance:</b></p> <p>Students learn about scientific discoveries from a diverse range of people from our culture and other cultures, e.g., Ignaz Semmelweis and Louis Pasteur.</p> <p>Students learn about the continual evolution of scientific ideas which occurs through the acceptance that different people have different ideas about a concept, e.g., spread of disease.</p> <p>Opportunities to consider conflict between religious beliefs and scientific understanding with respect and acceptance of people's values, e.g., HIV/AIDS, vaccinations, antibiotics and pain killers.</p> <p><b>Individual liberty:</b> Enforced/voluntary Isolation to prevent the spread of communicable diseases, e.g., Ebola, cholera, covid.</p> <p>Students learn about the continual evolution of scientific ideas which occurs through the acceptance that different people have different ideas about a concept e.g., vaccination, and herd immunity.</p> <p>Opportunities to discuss lifestyle choices and disease.</p> <p><b>Rule of Law:</b></p> <p>Regulations surrounding the development and use of new drugs.</p>

TERM 2 TOPIC/s	*Key Skills/Subject Links	*Career links & BV
<b>Disease and bioenergetics:</b> <b>B7</b> Non-communicable diseases (continued) <b>B8</b> Photosynthesis <b>B9</b> Respiration	<p>Practical skills: Investigating photosynthesis. Testing a leaf for starch. Evaluating the interaction of factors of photosynthesis.</p> <p>Practical skills: Investigating respiration Understanding and interpreting breathing rate and heart rate graphs.</p> <p><b>PE Link</b> – aerobic and anaerobic respiration, oxygen debt and lactic acid (sports performance)</p>	<p><b>Career links</b> Food production industry, farming, horticulture, Sports scientist, sports performance analyst, medical profession, sports medicine, personal fitness instructor.</p> <p><b>British Values</b>  <b>Rule of Law:</b> Students follow laboratory rules for the safety of all.</p>
TERM 3 TOPIC/s	*Key Skills/Subject Links	*Career links & BV
<b>Disease and bioenergetics:</b> <b>B9</b> Respiration (continued) <b>Biological responses:</b> <b>B10</b> The human nervous system	<p>Evaluate the advantages and disadvantages of using eye surgery and glasses to correct vision.</p> <p><b>Psychology Link</b> – The Human nervous system.  <b>Physics Link</b> – The eye: lenses, focusing light, correcting common eye defects e.g., short sight (myopia).</p>	<p><b>Career links</b> Neurologist, psychiatrist, Speech pathologist, optician.</p> <p><b>British values</b>  <b>Rule of Law:</b> Opportunity to discuss regulations surrounding the use of technology and medicine in eye surgery.  <b>Individual Liberty:</b> Opportunity to discuss treatment in terms of patient choice.</p>
TERM 4 TOPIC/s	*Key Skills/Subject Links	*Career links & BV
<b>Biological responses:</b> <b>B11</b> Hormonal coordination	<p>Compare the effectiveness of types of contraception. Explain and evaluate the role of artificial hormones in overcoming infertility.</p>	<p><b>Career links</b> medicinal research, endocrinologist, diabetes nurse.</p> <p><b>British values</b>  <b>Rule of Law:</b> Laws relating to age of consent, contraception, and IVF.  <b>Individual Liberty:</b> Opportunity to debate issues where students can share their opinions and listen to the views of others. For example, contraception and fertility, and the use of IVF.</p>

TERM 5 TOPIC/s	*Key Skills/Subject Links	*Career links & BV
<b>Biological responses:</b> <b>B12</b> Homeostasis in action <b>Genetics and reproduction:</b> <b>B13</b> Reproduction	<p>Construction of Punnett squares to determine sex inheritance.</p> <p><b>Health and social care Link</b> – reproduction.</p> <p><b>PE Link</b> – hydration.</p>	<p><b>Career links</b></p> <p>Dialysis nurse, medical research, endocrinologist, gynecologist, sonographer, midwife, medical receptionist.</p> <p><b>British values</b></p> <p><b>Rule of Law:</b></p> <p>Regulation of transplants. Regulation of genetic engineering.</p> <p><b>Mutual respect and tolerance:</b></p> <p>Opportunity to discuss the ethics of dialysis and kidney transplants. Opportunities to consider conflict between religious beliefs and scientific understanding with respect and acceptance of people’s values e.g., genetic engineering, cloning and gene editing of embryos.</p> <p><b>Individual Liberty:</b> Opportunity to discuss ethics, including donor cards and forced organ donation, embryo screening, genetic engineering.</p>
TERM 6 TOPIC/s	*Key Skills/Subject Links	*Career links & BV
<b>Ecology:</b> <b>B16</b> Adaptations, interdependence, and competition	<p>Use of quadrats to measure the distribution of living things.</p> <p><b>Math Link</b> – Mean, median and mode.</p>	<p><b>Career links</b></p> <p>Botanist, Biomedical engineer.</p>