**SPECIFICATION OVERVIEW**

**AQA GCSE BIOLOGY 8461**

**SUBJECT CONTENT**

1. Cell biology

1.1 Cell structure

1.1.1 Eukaryotes and prokaryotes

1.1.2 Animal and plant cells

1.1.3 Cell specialisation

1.1.4 Cell differentiation

1.1.5 Microscopy

1.1.6 Culturing microorganisms (biology only)

1.2 Cell division

1.2.1 Chromosomes

1.2.2 Mitosis and the cell cycle

1.2.3 Stem cells

1.3 Transport in cells

1.3.1 Diffusion

1.3.2 Osmosis

1.3.3 Active transport

2. Organisation

2.1 Principles of organisation

2.2 Animal tissues, organs and organ systems

2.2.1 The human digestive system

2.2.2 The heart and blood vessels

2.2.3 Blood

2.2.4 Coronary heart disease: a non-communicable disease

2.2.5 Health issues

2.2.6 The effect of lifestyle on some non-communicable diseases

2.2.7 Cancer

2.3 Plant tissues, organs and systems

2.3.1 Plant tissues

2.3.2 Plant organ system

3. Infection and response

3.1 Communicable diseases

3.1.1 Communicable (infectious) diseases

3.1.2 Viral diseases

3.1.3 Bacterial diseases

3.1.4 Fungal diseases

3.1.5 Protist diseases

3.1.6 Human defence systems

3.1.7 Vaccination

3.1.8 Antibiotics and painkillers

3.2 Monoclonal antibodies (biology only) (HT only)

3.2.1 Producing monoclonal antibodies

3.2.2 Uses of monoclonal antibodies

3.3 Plant disease (biology only)

3.3.1 Detection and identification of plant diseases

3.3.2 Plant defence responses

4. Bioenergetics

4.1 Photosynthesis

4.1.1 Photosynthetic reaction

4.1.2 Rate of photosynthesis

4.1.3 Uses of glucose from photosynthesis

4.2 Respiration

4.2.1 Aerobic and anaerobic respiration

4.2.2 Response to exercise

4.2.3 Metabolism

5. Homeostasis and response

5.1 Homeostasis

5.2 The human nervous system

5.2.1 Structure and function

5.2.2 The brain (biology only)

5.2.3 The eye (biology only)

5.2.4 Control of body temperature (biology only)

5.3 Hormonal coordination in humans

5.3.1 Human endocrine system

5.3.2 Control of blood glucose concentration

5.3.3 Maintaining water and nitrogen balance in the body (biology only)

5.3.4 Hormones in human reproduction

5.3.5 Contraception

5.3.6 The use of hormones to treat infertility (HT only)

5.3.7 Negative feedback (HT only)

5.4 Plant hormones (biology only)

5.4.1 Control and coordination

5.4.2 Use of plant hormones (HT only)

6. Inheritance, variation and evolution

6.1 Reproduction

6.1.1 Sexual and asexual reproduction

6.1.2 Meiosis

6.1.3 Advantages and disadvantages of sexual and asexual reproduction (biology only**)**

6.1.4 DNA and the genome

6.1.5 DNA structure (biology only)

6.1.6 Genetic inheritance

6.1.7 Inherited disorders

6.1.8 Sex determination

6.2 Variation and evolution

6.2.1 Variation

6.2.2 Evolution

6.2.3 Selective breeding

6.2.4 Genetic engineering

6.2.5 Cloning (biology only)

6.3 The development of understanding of genetics and evolution

6.3.1 Theory of evolution (biology only)

6.3.2 Speciation (biology only)

6.3.3 The understanding of genetics (biology only)

6.3.4 Evidence for evolution

6.3.5 Fossils

6.3.6 Extinction

6.3.7 Resistant bacteria

6.4 Classification of living organisms

7. Ecology

7.1 Adaptations, interdependence and competition

7.1.1 Communities

7.1.2 Abiotic factors

7.1.3 Biotic factors

7.1.4 Adaptations

7.2 Organisation of an ecosystem

7.2.1 Levels of organisation

7.2.2 How materials are cycled

7.2.3 Decomposition (biology only)

7.2.4 Impact of environmental change (biology only) (HT only)

7.3 Biodiversity and the effect of human interaction on ecosystems

7.3.1 Biodiversity

7.3.2 Waste management

7.3.3 Land use

7.3.4 Deforestation

7.3.5 Global warming

7.3.6 Maintaining biodiversity

7.4 Trophic levels in an ecosystem (biology only)

7.4.1 Trophic levels

7.4.2 Pyramids of biomass

7.4.3 Transfer of biomass

7.5 Food production (biology only)

7.5.1 Factors affecting food security

7.5.2 Farming techniques

7.5.3 Sustainable fisheries

7.5.4 Role of biotechnology

8. Key ideas

**ASSESSMENTS**

