**Unit A: Maintaining Health**

**Chapter 1: Circulation and Immunity**

* Circulatory System
  + Cardiac Output Calculations
  + Anatomy of the heart
    - Vena Cava, Right and left Atrium/Ventricle, pulmonary artery/vein, aorta
  + Differences between veins, arteries and capillaries
  + Blood flow through the heart
  + Blood pressure
    - Systolic and diastolic
  + Factors affecting heart rate
  + Varicose veins – how are they formed?
  + Components of blood
    - White blood cells, red blood cells and platelets
    - What percentage each make up in the blood
    - Shape of blood cells and what each type does
  + The clotting process
    - Fibrin, scab, etc.
  + Cardiovascular Diseases and disorders
    - Atherosclerosis, coronary heart disease, heart attack, stroke, aneurysm, septal heart defect
    - What is angina?
    - How plaque builds up in the heart and vessels
  + Immune System
    - How does your body fight invaders?
    - How is disease spread?
      * Protists, fungi, viruses
    - Immune Response
      * Macrophages, antigens, antibodies, helper T Cells, Killer T Cells, Memory B Cells, Memory T Cells, Suppressor T Cell
    - Autoimmune disease
* **Chapter 2: Genetics**
  + Chromosomes
    - Where are they located?
    - Karyotyping
      * What do genetic disorders look like?
      * How do you tell if something is male or female?
      * What does Down syndrome look like?
    - Mitosis and Meiosis
    - Fertilization
    - Selective breeding
  + Breeding
    - Differences between cross pollination and self-pollination
  + Genetics
    - Dominant vs. Recessive Genes
    - Punnett Squares
    - Homozygous vs. Heterozygous
    - Genotype vs. Phenotype
    - Sex linked traits
    - Incomplete Dominance
  + DNA
    - Structure of DNA
      * Cytosine, Guanine, Adenine and Thymine
    - Protein Synthesis
  + Mutations
    - Cystic Fibrosis
    - Point Mutations
    - Tracing genetic disease
      * Pedigree Charts
  + Gene Therapy and Technologies for “curing” genetic disorders