Principles of the Biomedical Sciences - Course Outline

Unit One: The Mystery (31 days)
Lesson 1.1: Investigating the Scene (15 days)
  Activity 1.1.1: A Mysterious Death
  Activity 1.1.2: Examining the Scene
  Activity 1.1.3: Careers in the Biomedical Sciences
  Activity 1.1.4: The Evidence
  Activity 1.1.5: Time of Death
  Project 1.1.6: Blood Spatter Analysis
Lesson 1.2: DNA Analysis (9 days)
  Activity 1.2.1: What is DNA?
  Activity 1.2.2: DNA Extraction
  Activity 1.2.3: DNA Analysis
Lesson 1.3: The Findings (7 days)
  Activity 1.3.1: The Autopsy
  Activity 1.3.2: Confidentiality
  Activity 1.3.3: Was It a Crime?

Unit Two: Diabetes (38 days)
Lesson 2.1: What Is Diabetes? (10 days)
  Activity 2.1.1: Diagnosing Diabetes
  Project 2.2.2: The Insulin Glucose Connection
  Activity 2.1.3: Feedback
Lesson 2.2: The Science of Food (13 days)
  Project 2.2.1: Food Testing
  Activity 2.2.2: Food Labels
  Activity 2.2.3: The Biochemistry of Food
  Activity 2.2.4: Energy in Food
Lesson 2.3: Life With Diabetes (15 days)
  Activity 2.3.1: A Day in the Life of a Diabetic
  Project 2.3.2: Diabetic Emergency!
  Activity 2.3.3: Complications of Diabetes
  Problem 2.3.4: The Future of Diabetes Management and Treatment

Unit Three: Sickle Cell Disease (25 days)
Lesson 3.1: The Disease (6 days)
  Activity 3.1.1: Blood Detectives
  Activity 3.1.2: Sickle Cell Diaries
Lesson 3.2: It’s In the Genes (9 days)
  Activity 3.2.1: Protein Synthesis
  Activity 3.2.2: The Genetic Code
  Activity 3.2.3: Does Changing One Nucleotide Make a Big Difference?

Lesson 3.3: Chromosomes (4 days)
  Activity 3.3.1: How is DNA Passed Through the Generations?
  Activity 3.3.2: Chromosomes – A Closer Look (Optional)
  Activity 3.3.3: The Immortal Cells (Optional)

Lesson 3.4: Inheritance (6 days)
  Activity 3.4.1: Family Inheritance
  Activity 3.4.2: What’s the Probability?
  Activity 3.4.3: World Distribution of Sickle Cell Disease (Optional)

Unit 4: Heart Disease (39 days)

Lesson 4.1: Heart Structure (7 days)
  Activity 4.1.1: Path of Blood in the Heart
  Activity 4.1.2: Anatomy of the Heart

Lesson 4.2: The Heart at Work (11 days)
  Project 4.2.1: Heart Rate
  Project 4.2.2: Blood Pressure
  Activity 4.2.3: EKG

Lesson 4.3: Heart Dysfunction (12 days)
  Project 4.3.1: What is Cholesterol?
  Activity 4.3.2: Hypercholesterolemia
  Problem 4.3.3: The Heart as a Pump

Lesson 4.4: Heart Intervention (9 days)
  Project 4.4.1: Unblocking the Vessels
  Project 4.4.2: Heart Disease Intervention

Unit 5: Infectious Disease (20 days)

Lesson 5.1: Infection (20 days)
  Activity 5.1.1: Contagious
  Activity 5.1.2: Infectious Disease Agents
  Activity 5.1.3: Isolating Bacteria
  Activity 5.1.4: Gram Staining
  Activity 5.1.5: Bacterial Identification
  Project 5.1.6: Lines of Defense

Unit 6: Post Mortem (8 days)

Lesson 6.1: Analyzing Anna (8 days)
  Project 6.1.1: How Do the Parts Make a Whole?
  Activity 6.1.2: How Did She Die?