Biology Lab Experiment Materials

Equipment and materials are categorized below as “**Required**” (mandatory purchase), “**Virtual** (online/video provided) **/ Worksheet**”, and “**Optional**” supplies (not mandatory, but fun). The goal of labs is to offer hands-on experiences as well as online, virtual activities. Labs are meant to be predictive, interactive, engaging, educational, and fun.

* Eye protection (safety glasses or goggles) is recommended for some labs.
* You can use “substitute” equipment as long as it uses METRIC measurements.
* **“Required” items must be obtained.**
* “Virtual/Worksheet” is based on videos and worksheets that are provided.
* “Optional” is up to you.

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| **Unit of Biology** | **Lab Title/Topic** | **Supplies** | | |
| **Required** | **Virtual/Worksheet** | **Optional** |
| Introduction to Biology | Compound Microscope |  | Video Link | Compound Microscope |
| Introduction to Biology | Microscopic Field | * Metric Ruler * Calculator |  | Compound Microscope |
| Biochemistry | Chemistry Overview |  | * Video Links * PHET Simulation |  |
| Biochemistry | Biomolecules | * Marsh Mellows * Toothpicks * Colored Markers * Raisins |  |  |

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| **Unit of Biology** | **Lab Title/Topic** | **Required** | **Virtual/Hands On** | **Optional** |
| **Cell & Cell Organelles** | **LAB REPORT**  **Osmosis in an Egg** | * **3 Eggs IN THEIR SHELLS** * **Masking Tape** * **Marker** * **Distilled Water** * **CLEAR Sugar Syrup (e.g. Karo) Vinegar** * **Clear Cups or Jars Metric Measuring Tape** * **Paper Towels** * **Paper** * **Pencil** |  |  |
| Cell & Cell Organelles | Study of the Onion Cell |  | Worksheet with images | * Compound Microscope * Onion skin * Microscope slide * Cover slip * Toothpick * Alcohol * Lens paper * Gentian violet stain * Paper towel |
| Metabolism & Enzymes | Enzymes in Pineapple | * 1 envelope Knox * Gelatin * Marking Pen * Masking Tape * 4 test tubes * 10 – 1ml pipettes * Spoon * Apple juice * Pineapple juice * 10 ml graduated cyl * 100 ml grad cylinder * Metric cup * Stove or Hot Plate * Bleach * Vinegar |  | * Test Tube Rack * Hot Plate * goggles |
| **Unit of Biology** | **Lab Title/Topic** | **Required** | **Virtual/Hands On** | **Optional** |
| Photosynthesis | Study of the Cell (Elodea) |  | Video Link | * Compound Microscope * Elodea Leaf * Iodine stain * Paper Towel * Alcohol * Microscope slides * Cover slips * Lens Paper |
| **Photosynthesis**  **HONORS** | **Pigments in Photosynthesis** |  | **Video Link** | * **Green & Red Leaves** * **Metric ruler** * **2 – 500 ml beakers** * **Plastic Wrap** * **Filter Paper** * **Rubbing alcohol** * **Graduated cylinder** * **Pencil** |

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| **Unit of Biology** | **Lab Title/Topic** | **Required** | **Virtual/Hands On** | **Optional** |
| Cellular Respiration | Alcohol Fermentation in Yeast |  | Video for worksheet completion and data collection | * + 4 12-ounce bottles (see image)   + 4 packets of Active Dry Yeast (bread maker yeast) (2 ¼ teaspoons) (Make sure that the yeast has not reached its expiration date)   + Thermometer (⁰ C)   + Funnel (if needed, make your own out of a coffee filter by cutting a small hole.)   + Water Balloons that fit snugly on your test tubes (4)   + Metric Ruler and String   + 6 teaspoons of sugar (sucrose)   + Hot plate or stove   + 250 ml Warm Tap Water for each bottle (1 L total) |
| Cellular Respiration | Cellular Respiration Simulation |  | Video Links for worksheet completion |  |
| Mitosis | Mitosis in Cheek Cells |  | Video link for worksheet completion |  |
| Meiosis | Meiosis Simulation |  | Video link for worksheet completion |  |

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| **Unit of Biology** | **Lab Title/Topic** | **Required** | **Virtual/Hands On** | **Optional** |
| DNA, RNA | DNA Extraction Lab |  | Video links for worksheet completion | * Alcohol * Split peas * Detergent * Meat tenderizer * Metric cup * Blender * Strainer * Stirring spoons |
| Protein Synthesis | Protein Synthesis |  | Class Notes for worksheet completion |  |
| Genetics | Monohybrid Cross Segregation Lab | * 2 Brown paper bags * 1 bag white beans * 1 bag red beans |  |  |
| Genetics | Build a Body Lab | Quarter (coin) |  |  |
| Genetics | Human Blood Typing |  | Video links for worksheet completion |  |
| Semester Break | | | | |

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| **Unit of Biology** | **Lab Title/Topic** | **Required** | **Virtual/Hands On** | **Optional** |
| Genetic Variations Human Genetics | Genetics with a Smile |  | Worksheet |  |
| Genetic Variations Human Genetics | Hereditary Traits |  | Worksheet |  |
| **Genetic Variations Human Genetics** | **Bug Karyotype** | * **Scissors** * **Glue** | **Worksheet** |  |
| Creation Evolution Fossils | Fossil Identification |  | Worksheet |  |
| Classification Viruses Bacteria Protists Fungi | 6 Kingdom & Viruses Lab |  | Worksheet |  |
| Classification Viruses Bacteria Protists Fungi | Classification Viruses Bacteria Protists Fungi |  | Video for worksheet completion |  |
| Plants | Tree Identification |  | Worksheet & Dichotomous Key (provided) |  |
| **Plants**  **HONORS** | **Seed Germination** | * **Egg carton** * **Lettuce or Turnip Seeds** * **Potting Soil** |  |  |
| Animals | Recognizing Symmetry |  | Worksheet |  |
| Animals | 3 Kingdom Classification |  | * Worksheet * Dichotomous Key |  |
| Animals | Frog Dissection | **HONORS must have Frog Dissection Kit** | Video Links & Worksheet | Frog Dissection Kit |

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| **Unit of Biology** | **Lab Title/Topic** | **Required** | **Virtual/Hands On** | **Optional** |
| Ecology | Creating an Antarctic Food Web |  | Worksheet |  |
| Ecology | Pyramid & Biomass |  | Worksheet |  |
| Ecology | Population Growth |  | Video for worksheet completion |  |
| Ecology | Fish Management: Sampling | * Coffee Can (container) * 400-500 pieces of paper squares |  |  |
| Human Anatomy & Physiology | Bones, Muscles, Skin Anatomy |  | Video Links for worksheet |  |
| Human Anatomy & Physiology | Circulation, Rest & Exercise | * Stop Watch * 14-18 inch “Step” (chair, bleacher) |  | Sphygmomanometer |
| Human Anatomy & Physiology | Identify The Systems (Endocrine, Immune, Digestive, Excretory) |  | Worksheet |  |