• LabPaq Core is Hands-On Labs’ solution to competency based science education for economically minded institutions.
• Our solutions are built upon HOL’s core beliefs: providing students access to anytime, anywhere learning while providing exceptional hands-on experimentation.
• LabPaq Core develops the skills necessary for STEM articulation.
• Students gain exposure and experience with the core concepts and techniques required for continuing education and workforce development.
• With content tailored for student comprehension and success, each student is provided with a structured experience to build self confidence, critical thinking skills, and experimentation techniques.

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**NUMBER OF EXPERIMENTS: 8** **NUMBER OF EXPERIMENTS: 9**
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| **Overview of Anatomy** | • Describe common anatomical terms of the body and locate regions of the body in reference to anatomical position.  
• Create a human model using clay to demonstrate three planes in reference to anatomical position.  
• Identify the eleven organ systems, indicate the organs that are included in each system, and discuss the function of each organ system. |
| **Histology** | • Define histology and identify the characteristics of epithelial, connective, muscle, and nervous tissue.  
• View microscope slide images to identify the types and functions of epithelial tissue.  
• Describe the characteristics of connective, muscle, and nervous tissue. |
| **Overview of the Skeletal System** | • Identify the various bone shapes on a human skeletal model, which are found in the body and describe their functions and articulations.  
• Describe how the structure of bone tissue contributes to the overall function of the skeletal system and explore the concepts of bone growth and bone remodeling.  
• View the microscopic structure of bone and list the function of labeled microscopic structures. |
| **Axial and Appendicular Skeleton** | • Identify and label the bones of the axial and appendicular regions, and explain how the two regions produce mobility.  
• Identify major surface markings and characteristics of bones and identify their functional importance. |
| **Joints and Body Movements** | • Describe general joint structure and function and identify different joint structures in the body.  
• Observe different types of joints on a human skeleton model and palpate these same joints on the human body.  
• Perform complex movements and describe how the joints of the body are moving throughout each movement.  
• Dissect a chicken wing to view the structures of a synovial joint. |
| **Gross Anatomy of the Central Nervous System** | • Identify the structures and functions of the brain stem, cerebellum, diencephalon, cerebrum, and the spinal cord of the human central nervous system.  
• Model the human brain and describe the functions of the structures.  
• Compare the functions of the twelve cranial nerves and spinal nerves.  
• Model portions of the brachial plexus and the sciatic nerve on a human skeleton model.  
• Dissect and identify the structures of a sheep brain. |
| **Muscle Physiology** | • Describe an action potential, motor neuron, motor unit, twitch, incomplete tetanus, and complete tetanus, and interpret EMG readings.  
• Measure muscle fatigue through both qualitative and quantitative data, and perform maximal vertical jump tests with and without the utilization of the stretch-shortening cycle.  
• Model the pectoralis major and biceps brachii on a human skeleton model to determine the movements performed by the muscles. |
| **Reflex and Sensory Physiology** | • Explore the anatomical structures and physiological functions for the five senses.  
• Test the association between taste and smell, measure blind spots, and test the patellar reflexes of a volunteer.  
• Dissect a cow eye and identify its structures. |
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| Organization of Muscle Tissue      | • Identify the three types of muscle (skeletal, cardiac, and smooth) in the human body and discuss their distinguishing characteristics and function.  
• Examine microscopic images of skeletal, cardiac, and smooth muscle tissue.  
• Dissect a fetal pig to examine the muscle fiber arrangement for the pectoralis major and biceps brachii. |
| Gross Anatomy of the Muscular System | • Relate the muscular system to its role with the skeletal system and classify muscles as agonists, synergists, fixators, or antagonists.  
• Identify muscles of the head, neck, torso, upper body, and lower body on a human skeleton model, and determine the movements performed by these muscles.  
• Dissect a fetal pig to investigate the gross anatomy of the muscular system. |
| Organization of Nervous Tissue     | • Explain the anatomical structure of the nervous system and identify the major components of all neurons.  
• Observe microscopic features of a cross section of the spinal cord and a neuromuscular junction, and describe the functions of glial cells and dendrites.  
• Dissect a fetal pig to identify the nerves of the brachial and sacral plexuses. |
| Cardiovascular System: Heart and Blood Vessels | • Identify the structures and function of the cardiovascular system, and compare arteries and veins.  
• Examine the microscopic structures of cardiac muscle tissue, an artery, and a vein.  
• Dissect a sheep heart to identify the major anatomical structures.  
• Dissect a fetal pig to identify the major vasculature of the cervical and thoracic regions, and then compare the fetal pig and sheep hearts. |
| Anatomy of the Respiratory System  | • Identify the structures and function of the respiratory system.  
• Examine the microscopic features of respiratory tissues from the lung and trachea.  
• Dissect a fetal pig to view the structures of the respiratory system. |
| Respiratory Physiology             | • Describe the process of respiration and explain the properties of tissues that are ideal for respiration.  
• Identify the similarities and differences between organisms that respire through their skin, organisms that respire through their gills, and organisms that respire through their lungs.  
• Measure respiratory values, tidal volume, and minute ventilation at rest and during exercise, and estimate their lung capacity. |
| Digestive System                   | • Describe the structures and function of the digestive system, and describe the role of enzymes in digestion.  
• Examine microscopic images of the four main layers of the gastrointestinal wall and the endocrine and exocrine cells of the pancreas.  
• Dissect a fetal pig to identify the digestive system organs. |
| Anatomy of the Urinary System      | • Identify the structures and function of the urinary system.  
• Examine the histology of the kidney and urinary bladder.  
• Dissect a sheep kidney and label the structures.  
• Dissect a fetal pig to view the major components of the urinary system, and compare and contrast the sheep and pig kidneys. |
| Reproductive System                | • Describe differences in male and female reproductive anatomy and explain the functions of the reproductive organs.  
• View the microscopic structures of the ovary and testis.  
• Determine the sex of a fetal pig and dissect the pig to identify the reproductive structures. |