

In the *Clinical Laboratory Science CPU*, students perform classroom laboratory activities and apply knowledge and skills in a health care diagnostic setting. Collection, labeling, and processing of artificial samples of body fluids and tissues for laboratory assessment are performed by the students. All activities guide students through safe and appropriate use of equipment and supplies, as outlined by the standards of the health care profession.



## Areas Covered

- ◆ Anatomy and physiology
- ◆ Laboratory safety concepts
  - Mathematical principles
  - Conversions
  - Averaging
  - Statistics
- ◆ Determine proper phlebotomy procedures
- ◆ Blood typing using simulated blood samples
- ◆ Genetic engineering principles and procedures
- ◆ Genetics
- ◆ Biology
- ◆ Record keeping
- ◆ Legal and ethical scenarios
- ◆ Biology
- ◆ Skills and knowledge to aid students in various HOSA competitions



## Career Pathway Unit Includes:

Clinical Lab CD with a Digital Instructor's Overview Booklet, Beaker, Blood Typing Kit, Skills Cart™, Clinical Laboratory Assistant/Phlebotomist Textbook, Comprehensive Microscope, DNA Replication and Transcription Set, Genetics CD, IV Trainer, Medical Dictionary, Medical Laboratory Procedures Text, Viruses CD

# Clinical Laboratory Science Goals & Activities

- Explore careers that use clinical laboratory science.
- Study disease transmission.
- Identify biohazard safety levels and the precautions associated with each.
- Learn the importance of proper hand washing and maintaining medical asepsis.
- Define safety issues in the health care environment.
- Discover proper use of laboratory equipment.
- Use a pipette and pipette aid to transfer fluid into a microcentrifuge tube.
- Learn correct microscope maintenance and usage.
- Examine a slide at different levels of magnification using a microscope.
- Perform oil immersion microscopy.
- Examine the importance of quality control in a clinical laboratory setting.
- Explore standards in record keeping.
- Discuss several legal and ethical scenarios clinical laboratory personnel might face.
- Define urinalysis.
- Review the urinary system's anatomy and physiology.
- Examine methods of urine specimen collection.
- Discuss chemical, physical, and microscopic properties of urine and complete a simulated urinalysis.
- Define hematology and hemacytometer.
- Review the cardiovascular system's anatomy and physiology.
- Discover how red blood cells are formed.
- Review procedures for creating a blood smear.
- Review proper levels of glucose in the blood.
- Identify blood types and how they interact with each other.
- Consider Rh factor and its importance in blood typing and blood compatibility.
- Define platelets and describe the clotting process.
- Perform a blood typing experiment using simulated blood and anti-serums.
- Explore procedures used to diagnose diseases affecting coagulation.
- Review the circulatory system's anatomy and physiology.
- Explore the composition of blood.
- Determine appropriate procedures for collecting blood samples in different situations.
- Examine vacuum tube, syringe, and winged infusion methods of venipuncture.
- Practice venipuncture procedures using a venipuncture trainer.
- Examine viruses and their effect on the body.
- Consider standard virus treatments and why antibiotics are ineffective against viruses.
- Discover what bacteria are and how antibiotics work in curing bacterial infections.
- Review the immune system and the techniques it uses to detect and fight foreign bodies.
- Determine the benefits and potential dangers of genetic engineering.
- Discover Punnett squares as a tool for calculating genetic inheritance probability.
- Explore the processes of DNA transcription and replication.
- Construct a model of a DNA molecule.
- Review transcription and replication using a simulation of both processes.



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