**Course Description:**

Students will apply practical application of a wide range of clinical duties. Topics covered will include hematology, urinalysis, hematopoiesis processes, body chemistry, microbiology, and blood typing. Students will perform laboratory exercises illustrating principles of the cell and human physiology. Emphasis is given to safe handling, collection procedures, and preparation of specimens. Additionally, students will correlate and document clinical findings and maintain quality management in a clinical laboratory.

**Strand 2. Human Body System**

Learners will discuss the various forms, functions and pathophysiology associated with body systems and alterations related to the normal aging process, obtain a health history, perform an evaluation of body systems and document using medical terminology.

**Outcome 2.1. Human Body Form, Function and Pathophysiology**

Discuss the various human body systems, alterations related to the normal aging process and possible dysfunctions.

**Competencies**

2.1.1. Describe the physical characteristics, components and function of blood (e.g., ABO, Rh, blood

cells, precursors and respiratory).

2.1.2. Describe the cardiovascular system and trace the path of blood and factors affecting blood

flow.

2.1.3. Describe how blood pressure is controlled and factors influencing changes in blood pressure.

2.1.4. Describe the function and components of the respiratory system and pulmonary ventilation

and factors influencing respiratory rates.

2.1.5. Describe nerve tissue and the nervous system, including regions of the brain and their

function, the spinal nerves, signal transmission at synapses and the sympathetic and

parasympathetic system.

2.1.6. Describe the musculoskeletal system, including skeletal, cardiac and smooth muscle, various

bone structures and the role of bone marrow and joints and injuries.

2.1.7. Describe the gastrointestinal system, including structures of chewing, swallowing, digestion

and elimination and the role of accessory organs including the liver, pancreas and gallbladder.

2.1.8. Describe the urinary system structures and principles of glomerular filtration, electrolyte

exchanges and their role in the production of red blood cells and the control of blood

pressure.

2.1.9. Describe the immune system and the lymphatic system's role in immunity.

2.1.10. Describe the sensory system, related structures and functions.

2.1.11. Describe the endocrine system, its structures and the role of hormones.

2.1.12. Differentiate between the male and female reproductive system, structures and function.

2.1.13. Describe the integumentary system, related structures and functions.

2.1.14. Describe the difference between pathology and physiology and the conditions typically

observed during a disease state.

2.1.15. Explain the pathophysiology changes associated with or resulting from disease or injury.

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| **Pathways** | X | Health Information Management | x | Medical Bioscience | X | Allied Health and Nursing | | | X | Exercise Science and Sports Medicine |
| **Green Practices** |  | Green-specific |  | Context-dependent | | |  | Does not apply | | |

**Outcome 2.2. Evaluate Body Systems**

Use interviewing techniques, observation, auscultation, palpation and percussion to perform a systematic head‐to‐toe evaluation of the body systems and document using medical terminology.

**Competencies**

2.2.1. Provide privacy and demonstrate cultural sensitivity.

2.2.2. Contact interpretive services for non‐English speaking and English as a Second Language (ESL)

individuals.

2.2.3. Use age‐appropriate language to systematically review disease processes related to each body

system (e.g., vaccinations, allergies, reactions, history of abuse, history of suicidal ideation,

alcohol use, risk behaviors, stressors, sleep patterns, nutritional patterns, occupation, living

conditions, current medications, over‐the‐counter medications, herbals).

2.2.4. Perform vital signs.

2.2.5. Determine level of consciousness and cognition.

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| **Pathways** | X | Health Information Management | x | Medical Bioscience | X | Allied Health and Nursing | | | X | Exercise Science and Sports Medicine |
| **Green Practices** |  | Green-specific |  | Context-dependent | | |  | Does not apply | | |

**Outcome 2.3. Medical Terminology**

Decipher medical terms through word origin and structure with an emphasis on derivation, meaning, pronunciation and spelling.

**Competencies**

2.3.1. Build and decipher medical term meanings by identifying and using word elements (e.g., word

roots, prefixes, suffixes, combining forms).

2.3.2. Apply the rules used to build singular and plural forms of medical terminology derived from

the Greek and Latin language.

2.3.3. Use diagnostic, symptomatic and procedural terms to read and interpret various medical

reports.

2.3.4. Use the appropriate abbreviations and symbols to identify anatomical, physiological and

pathological classifications and the associated medical specialties and procedures.

2.3.5. Use proper spelling and pronunciation of medical terms when communicating medical

instructions and preparing medical documentations.

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| **Green Practices** |  | Green-specific |  | Context-dependent | | |  | Does not apply | | |

**Strand 3. Therapeutic Interventions**

Learners will administer or assist with environmental, health promotion, pharmacological, emergency, nutritional, exercise and rehabilitative and dental and surgical interventions and/or procedures to improve the individuals’ outcome and quality of life across the life span within their scope of practice, evaluate outcomes and ensure individual’s rights.

**Outcome 3.1. Environmental Interventions**

Create and maintain a safe, sterile, efficient, age‐appropriate care environment.

**Competencies**

3.1.1. Use standard precaution guidelines, recommended by the Centers for Disease Control and

Prevention, for reducing the risk of transmission of blood‐borne and other pathogens.

3.1.2. Maintain patients’ rights, respect individual’s choices and obtain informed consent.

3.1.3. Describe confidentiality guidelines in the Health Insurance Portability and Accountability Act

(HIPAA).

3.1.4. Decrease the risk of injury and elopement to the individual or others (e.g., by using restraints,

alarms, bedrails, hi‐low beds, padding, non‐slip footwear and hand rails).

3.1.5. Identify and respond to emergency call lights and alarms.

3.1.6. Identify and remove environmental and electrical hazards to decrease the risk of falls, injury,

or ingestion of dangerous materials (e.g., clutter, equipment, throw rugs, spills, plants,

hazardous chemicals).

3.1.7. Demonstrate chemical and electrical safety and their application to the work environment.

3.1.8. Determine the risk of burns resulting from equipment, liquids, chemicals and fire.

3.1.9. Describe and follow the precautions used in oxygen therapy and pressurized gases.

3.1.10. Clean, store, or dispose of supplies, specimens and laboratory glassware following protocol

and standard precautions.

3.1.11. Determine risk of bleeding and implement precautions.

3.1.12. Implement disaster preparedness response to fire, tornado, emergency evacuation, hazardous

material spill, infant/child abduction, bomb threat, violent person, active shooter, missing

adult and loss of power.

3.1.13. Identify risk factors of exposure to hazardous materials (i.e., chemical, radiologic, microbial)

and provide safety precautions.

3.1.14. Apply principles of asepsis and sterile techniques and determine recommended use of

germicides (e.g., sterilant, disinfectant, antiseptic).

3.1.15. Follow Standard Operational Protocols (SOP's) for exposure and disposal of tissue cultures,

contaminated materials, body fluids and radioisotopes and place sharps in biohazard

containers.

3.1.16. Use proper body mechanics to perform therapeutic interventions.

3.1.17. Identify electrical, thermal and drowning risks in aquatic environments.

3.1.18. Account for all instruments, supplies and equipment.

3.1.19. Control the level of distractions and noise.

3.1.20. Perform the safe operation, packing and cleaning of equipment.

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| **Pathways** | X | Health Information Management | x | Medical Bioscience | X | Allied Health and Nursing | | | X | Exercise Science and Sports Medicine |
| **Green Practices** |  | Green-specific |  | Context-dependent | | |  | Does not apply | | |

**Outcome 3.4. Emergency Interventions**

Respond to emergencies and natural disasters by performing emergency interventions and proper documentation.

**Competencies**

3.4.1. Perform cardiopulmonary resuscitation (CPR), first‐aid and automated external defibrillation

(AED).

3.4.2. Control hemorrhage.

3.4.3. Recognize and respond to anaphylactic shock.

**Strand 4. Assistive Care**

Learners will demonstrate the skills and knowledge to provide personal assistive care for the activities of daily living to a variety of individuals across the life span within their scope of practice.

**Outcome 4.1. Scope of Practice**

Demonstrate the roles and responsibilities of assistive personnel and identify the medical specialists who treat disorders of each body system.

**Competencies**

4.1.1. Describe the guidelines of the governing body concerning abuse, mistreatment, neglect and

misappropriation of an individual’s property.

4.1.2. Inform the supervisor of any changes in the individual’s condition.

4.1.3. Provide input to and work within an age‐appropriate plan of care developed by the

interdisciplinary team for each individual.

4.1.4. Describe the primary purpose of healthcare settings (e.g., long‐term care facility [LTCF], acute

care, home health).

4.1.5. Identify the medical specialists who treat disorders of each body system.

4.1.6. Identify body planes, directions, cavities, quadrants and regions.

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| **Pathways** | X | Health Information Management | x | Medical Bioscience | X | Allied Health and Nursing | | | X | Exercise Science and Sports Medicine |
| **Green Practices** |  | Green-specific |  | Context-dependent | | |  | Does not apply | | |

**Outcome 4.2. Therapeutic Communication and Interpersonal Skills**

Demonstrate communication techniques and behaviors when communicating with individuals and interacting with individuals with impairments and document.

**Competencies**

4.2.1. Describe non‐verbal communication, including gestures, posture, touch, facial expressions,

eye contact, body movements, avoidance and appearance.

4.2.2. Describe the importance of maintaining an individual’s personal space.

4.2.3. Describe the importance of empathy in interpersonal relationships and the need for kindness,

patience and listening.

4.2.4. Maintain aids that promote oral, auditory and visual health (e.g., eye glasses, hearing aids,

dentures).

4.2.5. Arrange food and utensils on the meal tray in a clock fashion for visually impaired individuals.

4.2.6. Position an individual for meals to avoid choking and assist in feeding.

4.2.7. Maintain a proper environment for eating (e.g., noxious odors, contaminated items, loud

noises).

4.2.8. Provide aids to facilitate communication for speech impaired individuals (e.g., picture cards,

slates, notepads).

**Outcome 4.3. Microorganisms, Infection Control and Infection**

Use basic principles of infection control to prevent the growth and spread of pathogenic microorganisms and infection.

**Competencies**

4.3.1. Describe the chain of infection (e.g., host, vectors, portal of entry).

4.3.2. Describe mechanisms for the spread of infection, including airborne, vector‐borne, common

vehicle, droplet and contact.

4.3.3. Describe methods of controlling or eliminating microorganisms and the importance of

practices that hinder the spread of infection (e.g., hand washing, disinfecting care areas).

4.3.4. Use personal protective equipment (PPE) when encountering body fluids, potential of

splashing, or respiratory droplets.

4.3.5. Demonstrate various decontamination techniques and procedures.

4.3.6. Demonstrate precaution guidelines.

4.3.7. Maintain isolation precautions.

4.3.8. Identify signs and symptoms of infection (e.g., fever, confusion, areas of redness, swelling,

pain).

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| **Pathways** | X | Health Information Management | x | Medical Bioscience | X | Allied Health and Nursing | | | X | Exercise Science and Sports Medicine |
| **Green Practices** |  | Green-specific |  | Context-dependent | | |  | Does not apply | | |

**Strand 5. Bioscience Research and Development**

Learners will demonstrate the skills and knowledge of interpreting laboratory requests, using protective clothing and hazardous material containment, specimen collection procedures, a variety of laboratory testing and techniques and maintenance of laboratory equipment and supplies.

**Outcome 5.1. Handling, Preparation, Storage and Disposal**

Follow standard operating protocols for handling, preparing, storing and disposing of

specimens, supplies and equipment.

**Competencies**

5.1.1. Use standard operating procedures for the safe use of instruments, equipment and gas

cylinders.

5.1.2. Prepare and interpret labels for chemicals, supplies and equipment.

5.1.3. Use chemical references to identify hazards associated with handling and storing chemical

materials.

5.1.4. Neutralize acids, bases, or caustic solutions for handling and disposal.

5.1.5. Ensure clean room integrity using Standard Operating Procedures (SOPs).

5.1.6. Sample, monitor and record the environmental conditions of the facility (e.g. air quality,

temperature, microbial contaminations).

5.1.7. Adjust, calibrate, maintain and perform systems diagnostics on laboratory equipment.

5.1.8. Maintain equipment logs and determine when to perform, implement, or schedule preventive

maintenance and/or systems updates.

5.1.9. Verify expiration dates and lot numbers.

5.1.10. Implement a chemical inventory system that includes all pertinent information regarding

stability, hazards and sensitivity.

5.1.11. Maintain an inventory system for manufactured products, including a monitoring system for

the pilfering of materials.

5.1.12. Maintain separate in‐processing, quarantine and release areas.

5.1.13. Monitor and maintain animal behavior, welfare and husbandry.

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| **Pathways** | X | Health Information Management | x | Medical Bioscience | X | Allied Health and Nursing | | | X | Exercise Science and Sports Medicine |
| **Green Practices** |  | Green-specific |  | Context-dependent | | |  | Does not apply | | |

**Outcome 5.2. Foundations of Chemistry**

Perform systematic and methodical application of general and organic chemistry principles to examine the structures, their functions, their binding to other molecules and the methodologies for their purification and characterization.

**Competencies**

5.2.1. Draw electronic configurations of elements, compounds and mixtures.

5.2.2. Use the periodic table to describe atomic structure and to characterize elements based on the

functional group.

5.2.3. Differentiate between organic and inorganic compounds.

5.2.4. Use common and chemical nomenclature for organic and inorganic materials.

5.2.5. Write names and formulas for common compounds.

5.2.6. Explain mole, molarity, normality, percent weight per volume (w/v) and percent volume per

volume (v/v).

5.2.7. Describe the chemical bonding and bond types, including ionic and covalent and the

relationships that they have with physical state of materials.

5.2.8. Apply the concepts of stoichiometry and the laws of thermodynamics to chemical reactions.

5.2.9. Balance chemical reactions.

5.2.10. Define catalyst and identify materials used as catalysts.

5.2.11. Predict endothermic and exothermic characteristics of a chemical reaction.

5.2.12. Use naming systems, including common and International Union of Pure and Applied

Chemistry (IUPAC) conventions.

5.2.13. Describe, use and calibrate precision weighing and measuring techniques (e.g., analytical

balance, micropipette) that are based on the metric system.

5.2.14. Calibrate volumetric glassware (e.g. pipets, volumetric flasks and burets).

5.2.15. Calculate errors in various measurements based on data acquired using common laboratory

equipment.

5.2.16. Apply standard rules for determining the number of significant figures in measurements and

in the answers to corresponding calculations.

5.2.17. Convert units of measure from English to metric and vice versa.

5.2.18. Calculate the volume, temperature and pressure of gases using the ideal gas law, Charles Law

and Boyles Law.

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| **Pathways** | X | Health Information Management | x | Medical Bioscience | X | Allied Health and Nursing | | | X | Exercise Science and Sports Medicine |
| **Green Practices** |  | Green-specific |  | Context-dependent | | |  | Does not apply | | |

**Outcome 5.3. Microbiology Testing and Technology**

Describe the morphology and process of reproduction of microorganisms important in clinical disease and biotechnology applications and perform assays as a diagnostic tool to detect the presence of a pathogen.

**Competencies**

5.3.1. Explain microbial taxonomy and classification systems and use them to identify microbial

organisms.

5.3.2. Compare and contrast cellular structure and functions of prokaryotic and eukaryotic cells.

5.3.3. Explain bacterial metabolism, reproduction, cell structures and their functions.

5.3.4. Identify aerobic bacteria through morphological, physical and biochemical properties.

5.3.5. Describe the structure of viruses and differentiate between types.

5.3.6. Identify the components of a nucleotide and differentiate from nucleosides.

5.3.7. Explain virulence, pathogenicity and the factors that contribute to pathogenicity.

5.3.8. Describe types and features of passive and active transport systems.

5.3.9. Describe molecular behavior of large molecules, including carbohydrates, lipids and proteins.

5.3.10. Explain how chemical energy operates major cell processes (e.g., biosynthesis, movement,

transport, growth).

5.3.11. Explain factors that affect and optimize rates of enzyme assay reactions.

5.3.12. Perform an enzyme‐linked immunosorbent assay (ELISA) and interpret the results.

5.3.13. Perform biochemical assays of proteins, lipids, carbohydrates, nucleic acids and enzymes.

5.3.14. Perform bioassays for pathogens.

5.3.15. Distinguish uses and limitations of various assays.

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| **Pathways** | X | Health Information Management | x | Medical Bioscience | X | Allied Health and Nursing | | | X | Exercise Science and Sports Medicine |
| **Green Practices** |  | Green-specific |  | Context-dependent | | |  | Does not apply | | |

**Outcome 5.4. Bio‐Molecular Technology**

Perform bio‐molecular applications using knowledge of nucleic acid structure and function, DNA replication, transcription, translation, chromosome structure and remodeling and regulation of gene expression in prokaryotes and eukaryotes.

**Competencies**

5.4.1. Predict and explain offspring genotypes and phenotypes using Mendel’s Laws and a Punnett

square.

5.4.2. Explain alternative forms of transmission (e.g., non‐Mendelian inheritance).

5.4.3. Explain, model and predict the three‐dimensional shape, bonding patterns (covalent and

hydrogen bonds) and antiparallel nature of deoxyribonucleic acid (DNA).

5.4.4. Model the Central Dogma Theory (e.g., replication, transcription, translation).

5.4.5. Describe the processes involved in gene regulation (e.g., histone acetylation, RNA stability, cotranslational and post‐translational modifications).

5.4.6. Discuss alternative types of gene expression (e.g., sex‐limited, sex‐linked, partial dominance,

epistatic, pleiotropic).

5.4.7. Identify, isolate and manipulate peptides and proteins (i.e., primary, secondary, tertiary,

quaternary).

5.4.8. Describe and perform the steps in creating a recombinant DNA molecule.

5.4.9. Isolate and purify nucleic acids, including chromosomal and extra‐chromosomal DNA

molecules.

5.4.10. Compare nucleic acids and chromosomal DNA molecules using a sequence database (e.g.,

Genebank®).

5.4.11. Perform and interpret the results of restriction enzyme digests.

5.4.12. Apply concepts of screening genetic expression, expression vectors and genetic libraries.

5.4.13. Perform and interpret the results of a Polymerase chain reaction.

5.4.14. Explain applications of Southern and Northern Blot Analysis.

5.4.15. Isolate, quantitate (e.g., Bradford assay) and characterize proteins (e.g., Western Blot

analysis).

5.4.16. Perform antibiotic resistance cloning techniques, including vector preparation, transformation

and selection.

5.4.17. Perform spectroscopy of biological materials explaining the principles behind the procedures,

the purpose of a blank and determine the concentration of biomolecular samples.

5.4.18. Explain results from the Human Genome project and other sequencing projects and explain

how gene sequencing is performed.

5.4.19. Perform gene analysis to determine the source of an isolated pathogen.

5.4.20. Explain the growing knowledge base regarding RNA and its role in gene expression.

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| **Pathways** | X | Health Information Management | x | Medical Bioscience | X | Allied Health and Nursing | | | X | Exercise Science and Sports Medicine |
| **Green Practices** |  | Green-specific |  | Context-dependent | | |  | Does not apply | | |

**Outcome 5.5. Laboratory Standard Operational Procedures**

Perform methods and techniques using protocols in order to conduct an experiment.

**Competencies**

5.5.1. Aseptically collect and prepare dry and wet samples for analysis, considering safety protocols.

5.5.2. Prepare and dispense stock reagents, buffers, media and solutions by calculating

concentrations, adjusting factors such as pH and selecting purification techniques and

containers.

5.5.3. Test and maintain the integrity of stains, reagents, chemicals and mounts.

5.5.4. Select and apply sterilization methods for reagents, buffers, media and solutions.

5.5.5. Perform laboratory measures by calculating and preparing a serial dilution, calculating

quantities needed to perform a test analysis and calculating unit conversions and

concentrations (graphing results).

5.5.6. Monitor physical properties of reagents, buffers, media and solutions for conductivity and

resistivity, pH and turbidity and explain the significance of each.

5.5.7. Perform separation techniques, including chemical separations (chromatography),

centrifugation, distillation and filtration and describe their principles and interpret the results.

5.5.8. Titrate liquids.

5.5.9. Transfer gases, liquids and solids from storage containers to equipment used in the

laboratory.

5.5.10. Use aseptic laboratory techniques while working.

5.5.11. Perform a chromatography separation of a given mixture of substances.

5.5.12. Use electrophoresis to separate nucleic acids and determine molecular weight.

5.5.13. Comply with industry‐based and required regulatory quality‐assurance practices (e.g., quality

control [QC], Good Laboratory Practice [GLP], Good Manufacturing Practice [GMP]) for

documentation.

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| **Pathways** | X | Health Information Management | x | Medical Bioscience | X | Allied Health and Nursing | | | X | Exercise Science and Sports Medicine |
| **Green Practices** |  | Green-specific |  | Context-dependent | | |  | Does not apply | | |

**Outcome 5.6. Culturing**

Perform experimental techniques used in cell biology to study cell growth, manipulation and evaluation.

**Competencies**

5.6.1. Identify the structure of cells and the functions of their components.

5.6.2. Explain classification, composition and preparation of culture media and prepare media for

propagation.

5.6.3. Identify bacteriologic methods necessary for isolation and identification of organisms.

5.6.4. Operate centrifuge, microscope, compound microscope, spectrophotometer, incubator,

colony counter, pipets and other basic microbiology and analytical equipment and using

microscopes, examine biological specimens.

5.6.5. Explain the principles of microscopy and process a specimen for light microscopy.

5.6.6. Prepare, incubate and identify colonies microscopically and macroscopically (e.g., colonial

morphology, staining procedures, biochemical).

5.6.7. Isolate, propagate, maintain and harvest pure cell lines.

5.6.8. Verify culture cell lines and determine the cause or causes of culture failures.

5.6.9. Explain the collection and handling of fungal, mycobacterial and viral specimens.

5.6.10. Explain Koch’s Postulates and their use in determining primary and secondary pathogens.

5.6.11. Describe how vectors (e.g., plasmids, transposons, viruses) are used to transform host and

microorganisms.

5.6.12. Correlate bacterial binary fission with generation time.

5.6.13. Describe physical factors that affect microbial growth and identify a normal bacteria

population growth curve.

5.6.14. Conduct a shelf‐life study to determine physical change and biological growth.

5.6.15. Conduct a thermal death time study on an organism.

5.6.16. Calculate values of cell concentration for both batch and continuous cultivation.

5.6.17. Identify hormones used to stimulate cell growth and test for antibiotic susceptibility.

5.6.18. Explain how cell cultures can be used to assay viability and cytotoxicity.

5.6.19. Demonstrate cryopreservation techniques by freezing and thawing cells.

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| **Pathways** | X | Health Information Management | x | Medical Bioscience | X | Allied Health and Nursing | | | X | Exercise Science and Sports Medicine |
| **Green Practices** |  | Green-specific |  | Context-dependent | | |  | Does not apply | | |

**Outcome 5.9. Clinical Laboratory Techniques and Procedures**

Perform and interpret clinical laboratory techniques and procedures.

**Competencies**

5.9.1. Maintain the integrity of a clinical sample, including patient/client identification and chain of

custody and explain how to adhere to chain‐of‐custody guidelines when required (e.g.,

forensic studies, blood alcohol, drug screen).

5.9.2. Describe control substance procedures, protocols, documentation and labeling techniques.

5.9.3. Differentiate between aseptic and sterile procedures when collecting specimens and maintain

bio‐hazardous materials procedures (e.g., urine, feces, sputum, blood).

5.9.4. Discuss the methods of blood collection, specimen processing and labeling procedures and the

potential problems that may occur.

5.9.5. Identify patient/client and inform them of the medical procedure to be performed.

5.9.6. Initiate intravenous (IV) therapy, blood withdrawal and arterial puncture using various

techniques (e.g., butterfly, vacutainer, syringe, capillary puncture) according to current

Occupational Safety and Health Administration (OSHA), Centers for Disease Control (CDC),

Clinical Lab Improvement Act (CLIA) and the National Committee for Clinical Laboratory

Standards (NCCLS) guidelines.

5.9.7. Identify resources needed for special procedures and demonstrate knowledge of special

phlebotomy collection procedures (e.g., phenylketonuria [PKU], galactosemia, blood

donations, blood cultures).

5.9.8. Differentiate between specimen collection, storage and handling techniques (e.g.,

temperature, light, time).

5.9.9. Determine order of draw and appropriate anticoagulants for ordered tests and correlate tube

stopper colors with tube additives and their actions.

5.9.10. Identify complications of venipuncture (e.g., patient fainting, short draw, inadequate

inversion, hemolysis, lack of blood flow, hematoma, petechia, nerve injury, mastectomy

issues).

5.9.11. Prepare peripheral blood smears and discuss testing volumes and methods for minimizing

excessive blood collection volumes.

5.9.12. Set up a procedure and collect an electrocardiograph (ECG).

5.9.13. Determine the general criteria for suitability of a specimen for analysis and reasons for

specimen rejection and recollection.

5.9.14. Identify major routine tests performed in clinical lab sections (e.g., blood bank, chemistry,

hematology, serology, microbiology, urinalysis).

5.9.15. Instruct patients/clients in the collection procedures for random, routine, non‐blood specimen

collection (e.g., clean‐catch, mid‐stream urine, stool specimens, semen, or sputum for testing.)

5.9.16. Perform Clinical Laboratory Improvement Act (CLIA) waived tests (e.g., dipstick or tablet

reagent urinalysis, blood glucose by glucose monitoring devices, ovulation tests, urine

pregnancy tests).

5.9.17. Assist with preparations for non‐CLIA waived procedures.

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| **Pathways** | X | Health Information Management | x | Medical Bioscience | X | Allied Health and Nursing | | | X | Exercise Science and Sports Medicine |
| **Green** |  | Green-specific |  | Context-dependent | | |  | Does not apply | | |

**Strand 6. Health Information Management**

Learners will demonstrate basic computer literacy, health information literacy and skills, confidentially and privacy of health records, information security and basic skills in the use of electronic health records.

**Outcome 6.1. Health Information Literacy**

Apply principles of systems operations used to capture, retrieve and maintain information from internal and external sources.

**Competencies**

6.1.1. Define health information management (HIM) and differentiate among data, information and

competency.

6.1.2. Differentiate between primary and secondary health data sources and databases.

6.1.3. Describe the architecture and data standards of health information systems.

6.1.4. Describe the principles of structure, design and use of health information (e.g., individual,

comparative, reports, trended data).

6.1.5. Use health record data collection tools (e.g., input screens, document templates).

6.1.6. Recognize standard data definitions, vocabularies, terminologies, nomenclatures (e.g.,

SNOMED‐CT), classifications (e.g., ICD9CM, ICD10, CPT) and relevant healthcare data sets (e.g.,

OASIS, HEDIS, UHDDS) as used in the organization’s health information systems.

6.1.7. Differentiate between the types and content of patient health records and the data collected

(e.g., paper‐based, electronic health records, personal health records).

6.1.8. Describe health record documentation requirements of external agencies and organizations

(e.g., those specified by accrediting bodies, regulatory bodies, professional review

organizations, licensure, reimbursement, discipline‐specific “good practice”).

6.1.9. Describe typical internal organizational health record documentation requirements, policies

and procedures.

*An “X” indicates that the pathway applies to the outcome.*

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| **Pathways** | X | Health Information Management | x | Medical Bioscience | X | Allied Health and Nursing | | | X | Exercise Science and Sports Medicine |
| **Green Practices** |  | Green-specific |  | Context-dependent | | |  | Does not apply | | |