

Academy of Health Professions

Foundations of Medicine and Health Science

Length of course – 1 semester

Overview

This course is designed to introduce students to the variety of health career opportunities for employment. The students' knowledge of the various careers, their educational requirements, salary range, expertise, Standards of Care and legal responsibilities not only helps the students in their own decision making for a career but also on how to select an appropriate health care professional for their personal care. The "In an Instant" scenario assists students to identify with adolescents their own age who are faced with a challenging medical crisis. The students learn how to use critical thinking skills to prioritize their response to the emergency situation at the scene and the follow-up management in the acute care setting. This teaching strategy encourages problem-solving skills, which are necessary in health care. The students will have the opportunity to work in teams, learn a new medical language, review professional journals enhancing their close reading skills of technical literature and be introduced to health care research as well as apply their mathematical skills to compute drug dosages, etc.

National Healthcare Foundation Standards and Accountability Criteria **(taken from National Consortium of Health Science and Technology** **Education website)**

Foundation Standard 1: Academic Foundation

Healthcare professionals will know the academic subject matter, required for proficiency within their area. They will use this knowledge as needed in their role.

Foundation Standard 2: Communications

Healthcare professionals will know the various methods of giving and obtaining information. They will communicate effectively, both orally and in writing.

Foundation Standard 3: Systems

Healthcare professionals will understand how their role fits into their department, their organization and the overall healthcare environment. They will identify how key systems affect services they perform and quality of care.

Foundation Standard 4: Employability Skills

Healthcare professionals will understand how employability skills enhance their employment opportunities and job satisfaction. They will demonstrate key employability skills and will maintain and upgrade skills as needed.

Foundation Standard 5: Legal Responsibilities

Healthcare professionals will understand the legal responsibilities, limitations, and implications of their actions within the healthcare delivery setting. They will perform their duties according to regulations, policies, laws, and legislated rights of clients.

Foundation Standard 6: Ethics

Healthcare professionals will understand accepted ethical practices with respect to cultural, social, and ethnic differences within the healthcare environment. They will perform quality healthcare delivery.

Foundation Standard 7: Safety Practices

Healthcare professionals will understand the existing and potential hazards to clients, co-workers, and self. They will prevent injury or illness through safe work practices and follow health and safety policies and procedures.

Foundation Standard 8: Teamwork

Healthcare professionals will understand the roles and responsibilities of individual members as part of the healthcare team, including their ability to promote the delivery of quality healthcare. They will interact effectively and sensitively with all members of the healthcare team.

Foundation Standard 9: Health Maintenance Practices

Healthcare professionals will understand the fundamentals of wellness and the prevention of disease processes. They will practice preventive health behaviors among the clients.

Foundation Standard 10: Technical Skills

Healthcare professionals will apply technical skills required for all career specialties. They will demonstrate skills and knowledge as appropriate.

Foundation Standard 11: Information Technology Applications

Healthcare professionals will use information technology applications required within all career specialties. They will demonstrate use as appropriate to healthcare applications.

Unit I Introduction- Careers and Characteristics of a Healthcare Professional

Unit 1 is intended as an opening to the course and will introduce the healthcare field, and healthcare pathways. Students will consider what the term “healthcare provider” means and what careers are included in the healthcare pathways. They will also begin to identify the characteristics that are required to work in healthcare, as well as how their personal attributes might fit with a healthcare career. The initial class discussion and self-awareness project lead into an introduction of the scenario that unifies the entire course and the interview project.

Learning Objectives:

Students will be able to:

- Define the term healthcare and healthcare professional.
- Explain the role of a healthcare professional.
- Identify the characteristics of good healthcare professionals.
- Identify values compatible with the role of a healthcare professional
- Identify careers within the healthcare field.
- Write a professional resume, using sample provided.

Relevant National Healthcare Foundation Standards

- **Standard 2: Communications** – Healthcare professionals will know the various methods of giving and obtaining information. They will communicate effectively, both orally and in writing.
- **Standard 4: Employability Skills** – Healthcare professionals will understand how employability skills enhance their employment opportunities and job satisfaction. They will demonstrate key employability skills and will maintain and upgrade skills, as needed.
- **Standard 8: Teamwork** – Healthcare professionals will understand the roles and responsibilities of individual members as part of the healthcare team, including their ability to promote the delivery of quality healthcare. They will interact effectively with all members of the healthcare team.
- **Standard 11: Information Technology Application** -Communicate using technology (fax, e-mail, and Internet) to access and distribute data and other information.

Unit 2: Medical Assessment

The medical assessment unit is divided into 6 lessons including: medical abbreviations, diagnostic techniques, circulatory system, skeletal system, nervous system, CPR and First Aid. Many different fields of biology, chemistry, and physics converge in the application of medical diagnostics, where a combination of chemical tests, physical evaluations, and advanced imaging techniques are used to assess body functions, and detect possible abnormalities. Many of these techniques are used in routine preventative care, but are also an essential part of the tools used to identify injuries in emergency room situations. This unit will investigate different methods of

evaluating body function, as well as learning basic anatomy, and the structure and function of selected body systems.

Learning Objectives:

Students will be able to:

- State the full names of common medical abbreviations.
- Explain the meaning of common medical abbreviations.
- Use medical abbreviations appropriately.
- Find the meaning of any unfamiliar abbreviations using appropriate reference sources.
- Demonstrate effective communication skills through reading, writing, listening and speaking.
- Present information visually, verbally and in written form to peer and professional audiences utilizing a variety of methods.

Relevant National Healthcare Foundation Standards

- **Standard 1: Academic Foundation:** Healthcare professionals will know the academic subject matter required for proficiency within their area. They will use this knowledge as needed in their role.
- **Standard 2: Communications** – Healthcare professionals will know the various methods of giving and obtaining information. They will communicate effectively, both orally and in writing.
- **Standard 4: Employability Skills** – Healthcare professionals will understand how employability skills enhance their employment opportunities and job satisfaction. They will demonstrate key employability skills and will maintain and upgrade skills, as needed.
- **Standard 11: Information Technology Applications**-Communicate using technology (fax, e-mail, and Internet) to access and distribute data and other information.

Unit 2- Medical Assessment: Lesson- Body Imaging Techniques

Imaging techniques are essential in identifying many types of injuries, which cannot be identified by symptoms alone. These techniques use different technologies to produce images of internal body structures, and the type of imaging technique employed depends on which internal structures are to be observed. In a healthcare environment, it is usually the attending physician that orders the image or scans to aid in diagnosis. However, highly skilled and trained healthcare professionals conduct the actual imaging technique. Students will investigate commonly used, non-invasive imaging techniques, find out when each technique is used, the healthcare professional responsible for carrying out the technique, and will then use the student's knowledge of anatomy to interpret images produced by these methods.

Learning Objectives:

Students will be able to:

- Explain how X-rays, CT, MRI, and ultrasound technology produces images of body regions.
- Use medical terminology pertaining to body imaging techniques.
- Describe the uses and limitations of body imaging techniques.
- Describe the type of information generated by these images.
- Identify the healthcare professional responsible for each type of body imaging.
- Interpret X-ray, CT, and MRI images and report their findings.
- Identify body quadrants, regions, cavities, organs and other landmarks on X-ray, CT, and MRI images.
- Use proper terminology to describe body directions, planes, and surfaces.

Unit 2- Medical Assessment: Lesson- Medical Laboratory Screening

Much of the information used for diagnosis is generated in a medical laboratory. Samples of body fluids are collected, carefully labeled, and sent to the medical laboratory for testing. The results are communicated to the physician in the form of a lab report that is then interpreted by the physician.

Learning Objectives:

Students will be able to:

- Utilize information literacy to research a common laboratory test used in the diagnosis of wellness and disease.
- State the proper and common names or acronym for common laboratory tests.
- Accurately use medical terminology and abbreviations.
- Explain the chosen test to include: specimen requirements, the purpose for the test, normal results or values, and what an abnormal result indicates to the treating physician.
- Use internet resources to research information.
- Present information visually, verbally and in written form.

Unit 2 Medical Assessment: Lesson- The Cell and Medical Laboratory Screening

Students will have the opportunity to use microscopes and other laboratory tools to view blood cells. This lesson will follow content taught about the cell and its structure and function.

Learning Objectives:

- Label a diagram of the main parts of the cell.
- Describe the major function of each part of the cell.
- Compare the four main types of tissue by describing the basic function of each type.
- Utilize information literacy to research a common laboratory test used in the diagnosis of wellness and disease.
- State the proper and common names or acronym for common laboratory tests.
- Accurately use medical terminology and abbreviations.
- Explain the chosen test to include: specimen requirements, the purpose for the test, normal results or values, and what an abnormal result indicates to the treating physician.
- Present information visually, verbally and in written form.
- Name the stain used and type of sample needed to prepare a peripheral blood smear for evaluation.
- Differentiate red blood cells from white blood cells.
- Using the 40X objective on the microscope, perform a white blood cell estimate.
- Calculate the average number of WBCs per high power field (40X).
- Using a conversion table, report the estimated WBC count per cubic millimeter (mm^3).
- Explain the units (e.g. mm^3) used to report blood cell counts (RBC and WBC).
- Demonstrate safe work practices and personal safety during laboratory testing.

Unit 2 Medical Laboratory Screening: Lesson - Toxicology Screening

A toxicology screen refers to various tests to determine the type and approximate amount of legal and illegal drugs a person has taken. Toxicology screening is most often done using a blood or urine sample. However, it may be done soon after swallowing the medication, using stomach contents that are obtained through gastric lavage or after vomiting. In some circumstances, a subject may need to provide the urine sample in the presence of the nurse or technician to verify that the urine came from the subject and was not tampered with. These tests are often done in emergency medical situations to evaluate possible accidental or intentional overdose or poisoning. They may also help determine the cause of acute drug toxicity, to monitor drug dependency, and to determine the presence of substances in the body for medical or legal purposes. Toxicology tests are not routinely administered for one drug at a time, rather initial tests are done to identify categories of drugs, and then if these tests are positive, further tests are conducted to identify the specific drug present from that category.

Unit 2 Medical Assessment: Lesson- Circulatory System, Vital Signs

The circulatory system is the main transport and cooling system of the body. It uses the pressure generated by a pump, the heart, to transport nutrients, gases and waste around the body in the blood. The focus of the lesson is on the assessment process and equipment used to determine health at any minute. The concentration is blood flow, heart rate and blood pressure to investigate factors, which affects this process.

Learning Objectives:

Students will be able to:

- List the four main vital signs.
- Measure and record vital signs within define parameters.
- Explain normal and abnormal values and characteristics of temperature, pulse, respirations, and blood pressure for infants, children, and adults.
- Identify common terminology and abbreviations used in documenting and discussing vital signs.
- Graph vital signs looking for abnormal readings and patterns.
- Conduct an investigation into factors that affect temperature, pulse, respiration and blood pressure.
- Correlate changes in heart rate and blood pressure with physiological changes.
- Explain how the parameters of blood pressure and heart rate are used as indicators of health and disease.

Unit 2 Medical Assessment: Lesson – CPR

The BLS for Healthcare Providers is a course designed by the American Heart Association to provide students with the knowledge and skills to save a life. Students will learn the CPR for victims of all ages and will practice CPR in a team setting. The use of the automated external defibrillator (AED) and how to relieve choking (foreign-body airway obstruction) is taught. Students will review how to recognize emergencies such as sudden cardiac arrest and how to respond appropriately to them.

Learning Objectives:

Students will be able to:

- Identify signs and symptoms of heart attack and stroke.
- Explain rationale for the use of AED.
- Explain the links for the Chain of Survival for infants, children and adults.
- Demonstrate CPR and management of obstructed airway on an adult, child and infant with use of AED and barrier devices.

- Define terms and medical abbreviations related to heart attack, stroke, CPR and obstructed airway.
- Discuss how to provide CPR for a victim with an advanced airway in place.

Unit 2 Medical Assessment: Lesson - First Aid

The National Safety First Aid course is offered to the students. It provides a 3 year certification if the student meets the cognitive and performance standards. The students must achieve at least a 70% on the written exam and pass the performance testing.

Learning Objectives:

Students will be able to:

- State how rescuer's actions can make a difference to a victim of injury or sudden illness.
- List the goals of first aid.
- Identify how to contact Emergency Medical Services (EMS).
- Describe how to do an initial assessment.
- Demonstrate how to perform a physical assessment.
- Demonstrate how to check the victim for life-threatening problems.
- Demonstrate how to control bleeding.
- Describe how to clean and dress a wound.
- Describe care for multiple injuries to different body parts.
- Explain how to care for internal bleeding and shock.
- Differentiate among first, second and third-degree burns.
- Identify first aid for a suspected spinal cord injury.
- Discuss first aid for bone, muscle and joint injuries.
- Describe first aid for sudden illness including seizures, diabetic emergencies, allergic reactions fainting, poisoning, and cold and heat emergencies, etc.

Unit 3 Follow-up Care: Lesson - Understanding the Principles of Infection Control

Continuing with the “In an Instant” scenario one of the characters contacts a nosocomial infection in the hospital that delays his healing and poses a real threat to his healing and recovery. Understanding the principles of infection control is essential for any health care worker in any field of health care. This basic knowledge of how disease is transmitted and strategies to prevent that transmission is critical. Nosocomial infections account for 1.7 million infections in hospitals, and cause 99,000 deaths per year in the US according to the Center for Disease Control. The most common cause of the spread of nosocomial infections through a patient population is through direct contact via a healthcare provider. A thorough and rigorous hand-washing regime is the single most effective measure that healthcare providers can take to prevent the spread of infection. Traditionally washing the hands with soap and water has been used to sanitize the hands, but recently alcohol-based hand sanitizers have become available.

Relevant National Healthcare Foundation Standards

- **Standard 1: Academic Foundation:** Healthcare professionals will know the academic subject matter required for proficiency within their area. They will use this knowledge as

needed in their role. Medical Mathematic – Apply mathematical computations related to healthcare procedures (metric and household, conversions and measurements).

- **Standard 2: Communications:** Healthcare professionals will know the various methods of giving and obtaining information. They will communicate effectively, both orally and in writing.
- **Standard 4: Employability Skills:** Healthcare professionals will understand how employability skills enhance their employment opportunities and job satisfaction. They will demonstrate key employability skills and will maintain and upgrade skills, as needed.
- **Standard 5: Legal Responsibilities:** Health care professionals will understand the legal responsibilities, limitations, and implications of their actions within the healthcare delivery setting. They will perform their duties according to regulations, policies, laws, and legislated rights of clients.
- **Standard 7: Safety Practices:** Healthcare professionals will understand the existing and potential hazards to clients, co-workers, and self. They will prevent injury or illness through safe work practices and follow health and safety policies and procedures.
- **Standard 9: Health Maintenance Practices:** Healthcare professionals will understand the fundamentals of wellness and the prevention of disease processes. They will practice health behaviors among the clients. Apply practices that promote prevention of disease and injury.

Learning Objectives:

- Identify classes of microorganisms by describing the characteristics of each class.
- List the components of the chain of infection.
- Differentiate between antisepsis, disinfection and sterilization.
- Observe standard precautions.
- Open sterile packages with no contamination.
- Don and remove personal protective equipment.
- Relate specific basic tasks to the care of a patient in a transmission-based isolation.
- Demonstrate specific performance skills to include: hand washing, donning and removing personal protective equipment, use of sterile gloves and maintaining a sterile field.
- Plot data accurately on a line graph.
- Explain why infections can spread quickly and give rise to epidemics.

Unit 3 Follow-Up Care: Lesson - Pharmacology: Medication Dosage- Labels, Calculations, Drug Interactions

A study by the Institute of Medicine of The National Academies in 2006 found that 1.5 million people are injured annually by medication errors. Children are particularly vulnerable to these types of mistakes, as their dosages are usually much smaller than those administered to adults. In the eye of the law, the person who administers the medication is legally responsible, regardless of whether they themselves calculated the dose or whether it was prepared for them.

Therefore it is critically important that everyone involved in patient care is able to correctly calculate the dose of a medication to be given to a patient.

Determining the correct dosage of a medication to be given to a patient is an essential skill in patient care. The amount of a drug given to a patient can vary depending on many factors such as age, weight, and the nature of the medical condition for which it is prescribed. Therefore, the concentration at which the drug provided is usually different from the actual amount given to the patient, and calculations have to be made to determine how much of the drug to administer to the patient.

Learning Objectives:

Students will be able to:

- Identify different types of information on drug labels.
- Discuss ways in which this information could be misconstrued, and possible solutions to this problem.
- Identify the role of health professionals in communicating drug-related information.
- Use metric conversions and ratio-proportion calculations to determine drug dosages.
- Use concepts of biology, chemistry, physics, and mathematics to solve health care related problems.
- Make informed decisions based on critical thinking and problem solving skills.
- Perform mathematical calculations related to the health care industry.
- Review the legal requirements for prescribing and dispensing medication.
- Review careers related to the use of medications.

Unit 4 Legal, Ethical Issues and Insurance

In a healthcare setting, the type of medical treatment delivered and health insurance coverage and legal issues often dictate the procedures that must be followed. Health insurance may not cover the cost of certain medications and treatments, leaving the patient to either foot the bill themselves or forgo the treatment.

Healthcare professionals have many ethical and legal responsibilities, which govern the way that they conduct their profession. They must observe ethical practices such as respect for cultural, social, and ethnic differences of patients and other workers, as well as protecting patient confidentiality. They must also practice their profession within the established guidelines of laws, policies, and regulations.

Relevant National Healthcare Foundation Standards

- **Standard 3: Systems:** Healthcare professionals will understand how their role fits into their department, their organization, and the overall healthcare environment. They will identify how key systems affect services they perform and quality of care.

- **Standard 4: Employability Skill:** Healthcare professionals will understand how employability skills enhance their employment opportunities and job satisfaction. They will demonstrate key employability skills and will maintain and upgrade skills, as needed.

Learning Objectives:

Students will be able to:

- Describe the role of health insurance in funding medical services.
- Identify the different type of health insurance plans available to consumers.
- Discuss how health insurance influences the availability of medical services.
- Identify instances of medical malpractice.
- Explain the responsibilities of healthcare professionals in maintaining a safe environment for the patient.
- Describe the difference between criminal and civil law.
- Describe court procedures for criminal and civil cases.
- Discuss the role of health care professionals and the patient in the prevention of adverse drug interactions.
- Identify the Medical Laboratory Toxicology tests which are used to identify the presence of drugs in the bloodstream.
- Describe the procedures for protecting patient confidentiality.
- Recognize barriers to the communication of medical information.
- Explain the role of healthcare professionals in preventing transmission of infection.
- Interpret verbal and nonverbal communication.
- Identify careers within the healthcare field.
- Recognize levels of education and credentialing requirements for healthcare professions.
- Identify employment opportunities within the healthcare professions.
- Describe workplace environments within the healthcare professions.
- Describe the potential for career growth within the healthcare professions.
- Develop components of a personal portfolio.