

# ***HEALTH SCIENCE I/ HEALTH SCIENCE II***

**MIS03 07033 & 07035**

***Health Science I 07033***

*The Health Science course is an introduction to subject matter pertaining to medically related careers. This introductory course is to help students interested in the medical field determine if a medical career is appropriate for their interests and capabilities. This course will cover subject matter such as History of Medicine, Health Care Systems, Careers in Healthcare and Career Exploration, Personal Qualities and Employability Skills, CPR/First Aid training, Infection Control, Introduction to Anatomy and Physiology and Disease Processes, Safety in Healthcare, Legal and Ethical in Healthcare, Fundamentals of Nutrition, and Growth and Development of the Human Body.*

***Health Science II 07035***

- Prerequisite: Health Science I -07033

*The Health Science II course is available to students who have taken Health Science I and wish to investigate their interest in the medical field further. This course will allow students to study the subject matter covered in Health Science I further and in-depth. Students will expand their skills and knowledge in specific areas of interest as well as have the opportunity for job shadowing experiences in areas of their interest. Emphasis on academics, professional development, leadership, and organizational skills are discussed and practiced throughout this course.*

**Credit** ***Health Science I***  
1 or 2 credits

***Health Science II***  
1 or 2 credits

**Level** ***Health Science I***  
Grades 9-12

***Health Science II***  
Grades 10-12

*The intention of this Framework is to set those competencies needed by the completion of both courses in the series.*

Standard 1	<b>HEALTH SCIENCE ACADEMIC FOUNDATION</b> <i>-Understand human anatomy, physiology, common diseases and disorders, and medical math principles.</i>	
Topic 1.1	<b>Human Anatomy and Physiology</b> <b>Student Competencies</b>	
	1.1.1	Identify basic levels of organization of the human body. <ol style="list-style-type: none"> <li>a. Chemical</li> <li>b. Cellular</li> <li>c. Tissue</li> <li>d. Organs</li> <li>e. Systems</li> <li>f. Organism</li> </ol>
	1.1.2	Identify body planes, directional terms, cavities, and quadrants. <ol style="list-style-type: none"> <li>a. Body planes (sagittal, mid-sagittal, coronal/frontal, transverse/horizontal)</li> <li>b. Directional terms (superior/inferior, anterior/posterior, ventral/dorsal, medial/lateral, proximal/distal, superficial/deep, cephalic/caudal)</li> <li>c. Cavities (dorsal, cranial, spinal, thoracic, abdominal, and pelvic, orbital, nasal, oral)</li> <li>d. Quadrants (right upper, right lower, left upper, and left lower)</li> </ol>
	1.1.3	Analyze basic structures and functions of human body systems (skeletal, muscular, integumentary, cardiovascular, lymphatic, respiratory, nervous, special senses, endocrine, digestive, urinary, and reproductive). <ol style="list-style-type: none"> <li>a. Skeletal (bone anatomy, axial and appendicular skeletal bones, functions of bones, ligaments, types of joints)</li> <li>b. Muscular (microscopic anatomy of muscle tissue, types of muscle, locations of skeletal muscles, functions of muscles, tendons, directional movements)</li> <li>c. Integumentary (layers, structures and functions of skin)</li> <li>d. Cardiovascular (components of blood, structures and functions of blood components, structures and functions of the cardiovascular system, conduction system of the heart, cardiac cycle)</li> <li>e. Lymphatic (structures and functions of lymphatic system, movement of lymph fluid)</li> <li>f. Respiratory (structures and functions of respiratory system, physiology of respiration)</li> <li>g. Nervous (structures and functions of nervous tissue and system, organization of nervous system, CNS/PNS, sympathetic/parasympathetic)</li> <li>h. Special senses (structures and functions of eye, ear, nose and tongue; identify senses for sight, hearing, smell, taste, touch)</li> <li>i. Endocrine (endocrine versus exocrine, structures and functions of endocrine system, hormones, regulation of hormones)</li> </ol>

		<ul style="list-style-type: none"> <li>j. Digestive (structures and functions of gastrointestinal tract, chemical and mechanical digestion, structures and functions of accessory organs)</li> <li>k. Urinary (structures and functions of urinary system, gross and microscopic anatomy, process of urine formation, urine composition, homeostatic balance)</li> <li>l. Reproductive (structures and functions of male and female reproductive systems, formation of gametes, hormone production and effects, menstrual cycle, and conception)</li> </ul>
<b>Topic 1.2</b>	<b>Diseases and Disorders</b>	
<b>Student Competencies</b>		
	1.2.1	Describe common diseases and disorders of each body system (such as: cancer, diabetes, dementia, stroke/CVA, heart disease, tuberculosis, hepatitis, COPD, kidney disease, arthritis, ulcers, asthma, cataracts, concussion/traumatic brain injury, cystic fibrosis, depression, anxiety, bipolar disorder). <ul style="list-style-type: none"> <li>a. Etiology</li> <li>b. Pathology</li> <li>c. Diagnosis</li> <li>d. Treatment</li> <li>e. Prevention</li> </ul>
	1.2.2	Discuss research related to emerging diseases and disorders (such as: autism, VRSA, PTSD, Listeria, seasonal flu).
<b>Topic 1.3</b>	<b>Medical Mathematics</b>	
<b>Student Competencies</b>		
	1.3.1	Demonstrate competency in basic math skills and mathematical conversions as they relate to healthcare. <ul style="list-style-type: none"> <li>a. Metric system (such as: centi, milli, kilo, deci, micro)</li> <li>b. Mathematical (average, ratios, fractions, percentages, addition, subtraction, multiplication, division)</li> <li>c. Conversions (height, weight/mass, length, volume, temperature, household measurements)</li> </ul>
	1.3.2	Demonstrate the ability to analyze diagrams, charts, graphs, and tables to interpret healthcare results.
	1.3.3	Demonstrate use of the 24-hour clock/military time.
<b>Standard 2</b>	<b>COMMUNICATION</b> <i>-Demonstrate methods of delivering and obtaining information, while communicating effectively.</i>	
<b>Topic 2.1</b>	<b>Concepts of Effective Communication</b>	
<b>Student Competencies</b>		
	2.1.1	Model verbal and nonverbal communication.
	2.1.2	Identify common barriers to communication. <ul style="list-style-type: none"> <li>a. Physical disabilities (aphasia, hearing loss, impaired vision)</li> <li>b. Psychological barriers (attitudes, bias, prejudice, stereotyping)</li> </ul>

		c. Language barriers
	2.1.3	Identify the differences between subjective and objective information.
	2.1.4	Interpret elements of the communication process using basic sender-receiver-message-feedback model.
	2.1.5	Practice speaking and active listening skills.
	2.1.6	Modify communication to meet the needs of the patient/client and be appropriate to the situation.
<b>Topic 2.2</b>	<b>Medical Terminology</b>	
	<b>Student Competencies</b>	
	2.2.1	Use common roots, prefixes, and suffixes to communicate information.
	2.2.2	Interpret medical abbreviations to communicate information. <ul style="list-style-type: none"> <li>a. Common abbreviations</li> <li>b. Joint Commission official “Do Not Use List”</li> </ul>
<b>Topic 2.3</b>	<b>Written Communication Skills</b>	
	<b>Student Competencies</b>	
	2.3.1	Utilize proper elements of written and electronic communication (spelling, grammar, and formatting).
	2.3.2	Prepare examples of technical, informative, and creative writing.
<b>Standard 3</b>	<b>SYSTEMS</b> <i>-Identify how key systems affect services performed and quality of care.</i>	
<b>Topic 3.1</b>	<b>Healthcare Delivery Systems</b>	
	<b>Student Competencies</b>	
	3.1.1	Compare healthcare delivery systems. <ul style="list-style-type: none"> <li>a. Non-profit and for profit (such as: acute care, ambulatory facilities, long-term care facilities, home health, medical and dental offices, mental health services)</li> <li>b. Government (such as: CDC, CMS, NIH, FDA, OSHA, Public Health systems/Health Departments, Veteran’s Administration)</li> <li>c. Non-profit (such as: American Cancer Society, American Red Cross, WHO, March of Dimes, American Heart Association)</li> </ul>
	3.1.2	Describe the responsibilities of consumers within the healthcare system (such as: self-advocacy, patient compliance, provider and consumer obligations, Patient’s Bill of Rights).
	3.1.3	Assess the impact of emerging issues on healthcare delivery systems (such as: technology, epidemiology, bioethics, socioeconomics, behavior/mental health).
	3.1.4	Discuss healthcare economics and common methods of payment for healthcare. <ul style="list-style-type: none"> <li>a. Private health insurance (such as: Blue Cross, Affordable Care Act - ACA)</li> </ul>

		<ul style="list-style-type: none"> <li>b. Managed care (such as: HMOs, PPOs, IPAs, medical home)</li> <li>c. Government programs (Medicare, Medicaid, Tricare, and Workers' Compensation)</li> </ul>
	3.1.5	Identify fundamental terms related to health insurance (such as: Claim, Coinsurance, Co-payment, Explanation of Benefits (EOB), Fraud, HIPAA, Medical Coding , Premium)
<b>Standard 4</b>	<b>EMPLOYABILITY SKILLS</b> <i>-Utilize employability skills to enhance employment opportunities and job satisfaction.</i>	
<b>Topic 4.1</b>	<b>Personal Traits of the Health Professional</b>	
	<b>Student Competencies</b>	
	4.1.1	<p>Identify personal traits and attitudes desirable in a member of the career ready healthcare team.</p> <ul style="list-style-type: none"> <li>a. Acceptance of criticism</li> <li>b. Competence</li> <li>c. Dependability</li> <li>d. Discretion</li> <li>e. Empathy</li> <li>f. Enthusiasm</li> <li>g. Honesty</li> <li>h. Initiative</li> <li>i. Patience</li> <li>j. Responsibility</li> <li>k. Self-motivation</li> <li>l. Social and cultural competence</li> <li>m. Tact</li> <li>n. Team player</li> <li>o. Willingness to learn</li> </ul>
	4.1.2	Summarize professional standards as they apply to hygiene, dress, language, confidentiality and behavior.
<b>Topic 4.2</b>	<b>Employability Skills</b>	
	<b>Student Competencies</b>	
	4.2.1	<p>Apply employability skills in healthcare.</p> <ul style="list-style-type: none"> <li>a. Chain of command</li> <li>b. Correct grammar</li> <li>c. Decision making</li> <li>d. Flexible</li> <li>e. Initiative</li> <li>f. Integrity</li> </ul>

		<ul style="list-style-type: none"> <li>g. Loyalty</li> <li>h. Positive attitude</li> <li>i. Professional characteristics</li> <li>j. Prompt and prepared</li> <li>k. Responsibility</li> <li>l. Scope of practice</li> <li>m. Teamwork</li> <li>n. Willing to learn</li> </ul>
<b>Topic 4.3</b>	<b>Career Decision-making</b>	
<b>Student Competencies</b>		
	4.3.1	Research levels of education, credentialing requirements, and employment trends in health professions.
	4.3.2	Distinguish differences among careers within health science pathways (diagnostic services, therapeutic services, health informatics, support services, or biotechnology research and development).
<b>Topic 4.4</b>	<b>Employability Preparation</b>	
<b>Student Competencies</b>		
	4.4.1	Develop components of a personal portfolio. <ul style="list-style-type: none"> <li>a. Letter of introduction</li> <li>b. Resume</li> <li>c. Sample Projects</li> <li>d. Writing Sample</li> <li>e. Work-based Learning Documentation</li> <li>f. Oral Report</li> <li>g. Service Learning/Community Service</li> <li>h. Credentials</li> <li>i. Technology Skills</li> <li>j. Leadership Examples</li> </ul>
	4.4.2	Identify strategies for pursuing employment (social media, personal networking, job sites, internships).
<b>Standard 5</b>	<b>LEGAL RESPONSIBILITIES</b>	
	<i>-Describe legal responsibilities, limitations, and implications on healthcare worker actions.</i>	
<b>Topic 5.1</b>	<b>Legal Responsibilities and Implications</b>	
<b>Student Competencies</b>		
	5.1.1	Analyze legal responsibilities and implications of criminal and civil law. <ul style="list-style-type: none"> <li>a. Abuse</li> <li>b. Assault</li> </ul>

		<ul style="list-style-type: none"> <li>c. Battery</li> <li>d. Harassment</li> <li>e. Invasion of privacy</li> <li>f. Libel</li> <li>g. Malpractice</li> <li>h. Negligence</li> <li>i. Slander</li> <li>j. Tort</li> </ul>
<b>Topic 5.2</b>	<b>Legal Practices</b>	
<b>Student Competencies</b>		
	5.2.1	Apply standards for the safety, privacy and confidentiality of health information (HIPAA, privileged communication).
	5.2.2	Describe advance directives.
	5.2.3	Summarize the essential characteristics of a patient's basic rights within a healthcare setting.
	5.2.4	Differentiate informed and implied consent.
	5.2.5	Explain laws governing harassment and scope of practice.
	5.2.6	Describe the concept of scope of practice.
	5.2.7	Interpret procedures for reporting activities and behaviors that affect the health, safety, and welfare of others (incident report).
<b>Standard 6</b>	<b>ETHICS</b> <i>-Understand accepted ethical practices with respect to cultural, social, and ethnic differences within the healthcare environment.</i>	
<b>Topic 6.1</b>	<b>Ethical Practice</b>	
<b>Student Competencies</b>		
	6.1.1	Differentiate between ethical and legal issues impacting healthcare.
	6.1.2	Identify ethical issues and their implications related to healthcare (such as: organ donation, in vitro fertilization, euthanasia, scope of practice, ethics committee, gene editing).
	6.1.3	Utilize procedures for reporting activities and behaviors that affect the health, safety, and welfare of others (such as: incident report).
<b>Topic 6.2</b>	<b>Cultural, Social, and Ethnic Diversity</b>	
<b>Student Competencies</b>		
	6.2.1	Discuss religious, social, and cultural values as they impact healthcare (such as: ageism, ethnicity, race, religion, gender).

	6.2.2	Demonstrate respectful and empathetic treatment of ALL patients/clients (such as: customer service, patient satisfaction, civility).
<b>Standard 7</b>	<b>SAFETY PRACTICES</b> <i>-Identify existing and potential hazards to clients, co-workers, and self. Employ safe work practices and follow health and safety policies and procedures to prevent injury and illness.</i>	
<b>Topic 7.1</b>	<b>Infection Control</b>	
	<b>Student Competencies</b>	
	7.1.1	Explain principles of infection control. a. Chain of infection b. Mode of transmission (direct, indirect, vectors, common vehicle [air, food, water], healthcare-associated infections [nosocomial], opportunistic) c. Microorganisms (non-pathogenic, pathogenic, aerobic, anaerobic) d. Classifications (bacteria, protozoa, fungi, viruses, parasites)
	7.1.2	Differentiate methods of controlling the spread and growth of microorganisms. a. Aseptic control (antisepsis, disinfection, sterilization, sterile technique) b. Standard precautions c. Isolation precautions d. Blood borne pathogen precautions e. Vaccinations
<b>Topic 7.2</b>	<b>Personal Safety</b>	
	<b>Student Competencies</b>	
	7.2.1	Apply personal safety procedures based on Occupational Safety and Health Administration (OSHA) and Centers for Disease Control (CDC) regulations.
	7.2.2	Demonstrate principles of body mechanics.
<b>Topic 7.3</b>	<b>Environmental Safety</b>	
	<b>Student Competencies</b>	
	7.3.1	Apply safety techniques in the work environment. a. Ergonomics b. Safe operation of equipment c. Patient/client safety measures (check area for safety)



<b>Topic 7.4</b>	<b>Common Safety Hazards</b>	
	<b>Student Competencies</b>	
	7.4.1	Observe all safety standards related to the Occupational Exposure to Hazardous Chemicals Standard (Safety Data Sheets (SDSs)). (www.osha.gov)
	7.4.2	Comply with safety signs, symbols, and labels.
<b>Topic 7.5</b>	<b>Emergency Procedures and Protocols</b>	
	<b>Student Competencies</b>	
	7.5.1	Practice fire safety in a healthcare setting.
	7.5.2	Apply principles of basic emergency response in natural disasters and other emergencies (safe location, contact emergency personnel, follow facility protocols).
<b>Standard 8</b>	<b>TEAMWORK</b> <i>-Identify roles and responsibilities of individual members as part of the healthcare team.</i>	
<b>Topic 8.1</b>	<b>Healthcare Teams</b>	
	<b>Student Competencies</b>	
	8.1.1	Evaluate roles and responsibilities of team members. a. Examples of healthcare teams b. Responsibilities of team members c. Benefits of teamwork
	8.1.2	Identify characteristics of effective teams. a. Active participation b. Commitment c. Common goals d. Cultural sensitivity e. Flexibility f. Open to feedback g. Positive attitude h. Reliability i. Trust j. Value individual contributions
<b>Topic 8.2</b>	<b>Team Member Participation</b>	
	<b>Student Competencies</b>	
	8.2.1	Recognize methods for building positive team relationships (such as: mentorships and teambuilding).
	8.2.2	Analyze attributes and attitudes of an effective leader.

		<ul style="list-style-type: none"> <li>a. Characteristics (interpersonal skills, focused on results, positive)</li> <li>b. Types (autocratic, democratic, laissez faire)</li> <li>c. Roles (sets vision, leads change, manages accountability)</li> </ul>
	8.2.3	Apply effective techniques for managing team conflict (negotiation, assertive communication, gather the facts, clear expectations, mediation).
<b>Standard 9</b>	<b>HEALTH MAINTENANCE PRACTICES</b> <i>-Differentiate between wellness and disease. Promote disease prevention and model healthy behaviors.</i>	
<b>Topic 9.1</b>	<b>Healthy Behaviors</b>	
	<b>Student Competencies</b>	
	9.1.1	Promote self-care behaviors of health and wellness (such as: nutrition, weight control, exercise, sleep habits).
	9.1.2	Describe public health strategies for prevention of disease. <ul style="list-style-type: none"> <li>a. Routine physical exams</li> <li>b. Medical, dental, and mental health screenings</li> <li>c. Community health education outreach programs</li> <li>d. Immunizations</li> <li>e. Stress management</li> <li>f. Avoid risky behaviors</li> </ul>
	9.1.3	Investigate complementary and alternative health practices as they relate to wellness and disease prevention (such as: Eastern medicine, holistic medicine, homeopathy, manipulative and natural therapies).
	9.1.4	Discuss physical, mental, social, and behavioral development and its impact on healthcare, while identifying socioeconomic determinants of health and wellness.
<b>Standard 10</b>	<b>TECHNICAL SKILLS</b> <i>-Apply technical skills required for all career specialties and demonstrate skills and knowledge as appropriate.</i>	
<b>Topic 10.1</b>	<b>Technical Skills</b>	
	<b>Student Competencies</b>	
	10.1.1	Apply procedures for measuring and recording vital signs including the normal ranges (such as: height/weight, temperature, pulse, respirations, blood pressure, pain).
	10.1.2	Obtain training or certification in cardiopulmonary resuscitation (CPR), automated external defibrillator (AED), foreign body airway obstruction (FBAO) and first aid.

<b>Standard 11</b>	<b>INFORMATION TECHNOLOGY APPLICATIONS</b> <i>-Utilize and understand information technology applications common across health professions.</i>	
<b>Topic 11.1</b>	<b>Key Principles of Health Information Systems</b>	
	<b>Student Competencies</b>	
	11.1.1	Identify types of data collected in Electronic Health Records/Electronic Medical Records (EHR or EMR) (such as: history and physical, medications, diagnostic tests, patient demographics).
	11.1.2	Explore different types of health record data collection tools (such as: patient monitoring equipment, telemedicine, phone apps, and medical wearable devices).
	11.1.3	Identify the types and content of an EHR/EMR (such as: pharmacy, laboratory, radiology).
	11.1.5	Adhere to information systems policies, procedures, and regulations as required by national, state, and local entities.
<b>Topic 11.2</b>	<b>Privacy and Confidentiality of Health Information</b>	
	<b>Student Competencies</b>	
	11.2.1	Apply fundamentals of privacy and confidentiality policies and procedures (HIPAA).
	11.2.3	Identify common policies and procedures for proper access, disclosure and protection of personal health information (such as: passwords, administrative safeguards, database security).
	11.2.4	Describe consequences of inappropriate use of health data in terms of disciplinary action.
	11.2.5	Understand the principle to correct inaccurate information/errors entered into an EHR/EMR (such as: adding, clarifying, and correcting information).
<b>Topic 11.3</b>	<b>Basic Computer Skills</b>	
	<b>Student Competencies</b>	
	11.3.1	Apply basic computer concepts and terminology necessary to use computers and other mobile devices.
	11.3.2	Demonstrate basic computer troubleshooting procedures (such as: restart, check power supply, refresh browser, check settings).
	11.3.3	Demonstrate use of file organization and information storage.
	11.3.4	Identify uses of basic word processing, spreadsheet, and database applications.
	11.3.5	Evaluate validity of web-based resources.
	11.3.6	Demonstrate appropriate usage of email and social media in a work environment (such as: work-related communications, personal texting on own time, appropriate language and content, use full language sentences).