TN Department of Education | Postsecondary, Workforce, CTE, and Military Readiness

May 2025

Health Science Education

Primary Career Cluster:	Healthcare & Human Services
Course Contact:	CTE.Standards@tn.gov
Course Code(s):	C14H14
Prerequisite(s):	None
Credit:	1
Grade Level:	6-9
Focus Elective Graduation Requirements:	This course satisfies one of three credits required for an elective focus when taken in conjunction with other Healthcare or Business courses.
POS Concentrator:	This course satisfies one out of two required courses to meet the Perkins V concentrator definition, when taken in sequence in the approved program of study.
Programs of Study and Sequence:	This is the first course in all programs of study in the Healthcare career cluster. It is also an option for the Year 1 course in the Health Services Administration program of study in the Business cluster.
Aligned Student Organization(s):	HOSA: http://www.tennesseehosa.org SkillsUSA: https://www.skillsusatn.org/
Coordinating Work-Based Learning:	Teachers are encouraged to use embedded WBL activities such as informational interviewing, job shadowing, and career mentoring. For information, visit https://www.tn.gov/education/futurereadytn/pillar-4.html.
Promoted Tennessee Student Industry Credentials:	Credentials are aligned with postsecondary and employment opportunities and with the competencies and skills that students acquire through their selected program of study. For a listing of promoted student industry credentials, visit https://www.tn.gov/education/futurereadytn/pillar-1/student-industry-credentials.html.
Teacher Endorsement(s):	577, 720
Required Teacher Certifications:	Please refer to the Occupational Educator Licensure Guidance.
Required Teacher Training:	None
Teacher Resources:	https://www.tn.gov/content/tn/education/futurereadytn/pillar-3/career-clusters/healthcare-and-human-services.html

Course at a Glance

This career cluster has been identified as a Core industry by TN Works. Core industries are sectors essential to the functioning of the economy. They often serve as the backbone for other industries and are critical for national infrastructure, security, and overall economic health. Governments typically prioritize and protect these industries due to their broad impact on economic stability and societal well-being.

CTE courses provide students with an opportunity to develop specific academic, technical, and 21st century skills necessary to be successful in career and in life. In pursuit of ensuring every student in Tennessee achieves this level of success, we begin with rigorous course standards which feed into intentionally designed programs of study.

Students engage in industry relevant content through general education integration and experiences such as career and technical student organizations (CTSO) and work-based learning (WBL). Through these experiences, students are immersed with industry standard content and technology, solve industry-based problems, meaningfully interact with industry professionals, and use/produce industry specific, informational texts.

Using a Career and Technical Student Organization (CTSO) in Your Classroom

CTSOs are a great resource to put classroom learning into real-life experiences for your students through classroom, regional, state, and national competitions, and leadership opportunities. Below are CTSO connections for this course, note this is not an exhaustive list.

- Participate in CTSO Fall Leadership Conference to engage with peers by demonstrating logical thought processes and developing industry specific skills that involve teamwork and project management.
- Participate in contests that highlight job skill demonstration, interviewing skills, community service activities, extemporaneous speaking, and job interview.
- Participate in leadership activities such as Organizational Leadership, Prepared Speaking, HOSA Service Project, Creative Problem Solving, and HOSA Service Project.

Using Work-Based Learning (WBL) in Your Classroom

Sustained and coordinated activities that relate to the course content are the key to successful work-based learning. Possible activities for this course include the following. This is not an exhaustive list.

- **Standards 1.1-1.4** | Invite a malpractice lawyer or paralegal to discuss medicolegal cases.
- **Standards 2.1-2.2** | Tour a hospital or clinic
- **Standards 3.1-3.3 |** In teams, virtually collaborate with a healthcare professional to prepare a health education presentation for a specified age group.
- **Standards 5.1-5.11** | Invite an EMT or EMR to present first aid skills for burns, wounds, and bone/joint injuries incorporating infection control measures into the skills.

Course Description

Health Science Education is an introductory course designed to prepare students to pursue careers in the fields of public health, therapeutics, health services administration, diagnostics, and support services. Upon completion of this course, a proficient student will be able to identify careers in these fields, compare and contrast the features of healthcare systems, explain the legal and ethical ramifications of the healthcare setting, and begin to perform foundational health care skills. This course will serve as a strong foundation for all Healthcare programs of study as well as the Health Services Administration program of study.

Course Standards

1. Career Planning

1.1 Healthcare Systems: Examine the historical **evolution of healthcare systems** in the United States. Explain the importance of **major contributors and developments** linking them with **modern health care innovations and practices.**

1.2 Public Health Systems: Gather relevant information from multiple sources concerning the history of community health, disease outbreaks, historical figures, time periods, and/or practices to **understand how the public health system** has evolved.

1.3 Healthcare Careers: Compare and contrast **careers** in the **five health science career areas** (biotechnology research, therapeutic services, support services, health informatics, and diagnostic services). Include the following in the compare/contrast process:

a. job description;
b. roles and responsibilities;
c. programs or paths of study available to reach occupational goals;
d. licensing requirements; and
e. job availability, salaries, and benefits.

1.4 Professional Traits and Soft Skills in Healthcare: Summarize **professional traits and soft skills** (such as leadership, ethical responsibility, and time management) **required of healthcare professionals** in twenty-first century healthcare systems. Compare **professional traits and soft skills to self-identified traits and soft skills** determining areas for growth.

1.5 Ethics and Legal Issues: Define **ethics and legal terms** related to health care including, but not limited to:

a. law,
b. ethics,
c. abuse,
d. assault and battery,
e. slander,
f. libel,
g. false imprisonment,
h. malpractice,
i. invasion of privacy, and

j. advanced directives.

Create an artifact that includes a definition of the term, and a brief description of **how each might be demonstrated in a healthcare setting.** Use the chart to participate in a class discussion about notable medicolegal cases using appropriate **medicolegal terminology**.

1.6 Ethical Artificial Intelligence: **Explore the ethical implications of AI usage** through interactive discussions and case studies, learning to identify bias, ensure fairness, and protect privacy in AI systems. **Develop** critical thinking **skills to evaluate the societal impact of AI technologies**, while fostering a sense of responsibility and ethical decision-making in their own use of AI tools.

1.7 Career and Technical Student Organization Introduction: Introduce the program's aligned **Career and Technical Student Organization (CTSO), HOSA and/or SkillsUSA**, through an interactive activity, such as a classroom competition.

2. Healthcare Systems

2.1 Healthcare Delivery Systems: Identify the different **types of facilities and options for health care delivery** in **the United States healthcare delivery system.** Compare and contrast the **United States healthcare delivery system with those of two other countries** that have high efficiency scores in health care as rated by agencies such as the World Health Organization. Identify **areas for improvement in the United States** and brainstorm possible solutions.

2.2 Methods of Payment for Health Care: Differentiate among the **methods of payment for health care** in the United States including **private and state or federal insurance.** Define **insurance terms** including, but not limited to premium, deductible, co-pay, and benefit then use these terms to discuss the influence of increased costs on health care decisions made by healthcare consumers.

2.3 State and Federal Legislation: Summarize major state and federal legislation related to **community health** using both primary sources (such as laws) and secondary sources (such as media reports). Describe the **effects** of these **laws** on the provision of **healthcare in Tennessee** and the implications for at-risk populations.

3. Body Function and Structure

3.1 Body Systems, Quadrants, and Homeostasis: Break down each **body system** into a **list of organs** and describe the **function** of each system. Identify **cavities and quadrants** listing organs contained in each. Define **homeostasis** then use at least two systems and illustrate how they work together to maintain homeostasis.

3.2 Growth and Development Related to Health and Wellness: Evaluate **factors that impact human growth and development** related to the biophysical and mental/cognitive areas of

infants, toddlers, school age children, adolescents, and young, middle age, and senior adults. Elaborate on how each of these factors contributes to the **health and wellness of individuals**.

3.3 Child/Infant Mortality: Compare and contrast causes of **child/infant mortality** within the **first five years of life** in the Tennessee versus the United States. Identify **effective interventions** for prevention of infant and childhood disorders, supporting recommendations with evidence-based medical or public health practice standards retrieved from a variety of sources.

3.4 Patient Health Education Topics: Design a **patient health education awareness program** about one of the following wellness issues: optimal health, exercise and fitness, healthy eating and nutrition, sleep, stress or other mental health issues, drug/alcohol/tobacco use and abuse, body decoration, sexually transmitted infections, or cyber safety. Include characteristics of the behavior and/or signs and symptoms of the issue; major physical concerns associated with the issue; preventive measures; treatments; and support systems.

4. Infection Control/Medical Microbiology

4.1 Infection Control Concepts: Define **chain of infection** and provide **strategies for how to break each part of the chain** to prevent the spread of infection. Identify **infectious disease outbreaks** that have plagued our planet over the last ten years and apply the strategies for breaking the chain to each outbreak identified.

4.2 Infection Control Skills: Understand the principles of and successfully perform the following **skills to prevent or curtail the spread of pathogenic and non-pathogenic organisms**:

a. hand washing,
b. gloving, and
c. mask wearing.

5. Foundational Health Care Skills

5.1 Medical Terminology: Interpret the **historical development of the medical language**, illustrating the Latin and Greek origination of the medical terms used today. Detail the **importance of historical events** in medicine and **their relationship to modern medical language.** Identify and explain the **definitions and roles of the four types of word parts** (word roots, combining forms, combining vowels, suffixes, and prefixes) in forming medical terms. Apply knowledge of **word forms and structures** to interpret unfamiliar medical terms throughout this course.

5.2 Cultures and Communication: Differentiate between **verbal and nonverbal communication** and identify **common barriers.** Discuss **techniques for effective communication** and evaluate **how different cultures and generations attach different meanings** to various gestures, intonations, and other communication techniques.

Model/role-play **effective communication techniques** for interactions with different cultures and generations.

5.3 Patient and Employee Safety: Investigate **current safety practices in healthcare settings** including, but not limited to fire, electrical, chemical, and back safety. Demonstrate **safety practices** in the classroom lab.

5.4 Complementary and Alternative Medicine: Review health topics surrounding **complementary and alternative medicine** such as acupuncture, biofeedback, and herbal treatments on sites like the National Institute of Health, the Mayo Clinic, or Medline Plus. Rate the therapies according to perceived effectiveness. Include general information, purported benefits, use in the United States, side effects and/or risks, relevant research, cost, and links to more information.

5.5 Emergency Medicine Skills: Understand principles of and successfully perform **skills related to Emergency Medicine**, incorporating rubrics from the American Heart Association or American Red Cross for the following:

a. Basic First Aid care of bleeding and wounds,
b. Basic First Aid care for burns, and
c. Basic First aid for bone and joint injuries.

5.6 Dental Assisting Skills: Understand principles of and successfully perform **skills related to Dental Assisting,** incorporating rubrics from textbooks or clinical standards of practice for the following:

a. identifying teeth using the Federation Dentaire International Numbering System, and
b. demonstrate brushing and flossing techniques.

5.7 Medical Laboratory Assisting Skills: Understand principles of and successfully perform **skills related to Medical Laboratory Assisting**, incorporating rubrics from textbooks or clinical standards of practice for the following:

a. obtain a culture specimen and streak an agar plate (this may be simulated on paper)

5.8 Medical Assisting and Nursing Assisting Skills: Understand principles of and successfully perform **skills related to Medical Assisting and Nursing Assisting** incorporating rubrics from textbooks or clinical standards of practice for the following:

a. temperature, pulse, respiration, and blood pressure assessment; and
b. weighing an ambulatory patient.

5.9 Physical Therapy and Athletic Training Skills: Understand principles of and successfully perform **skills related to Physical Therapy and Athletic Training** incorporating rubrics from textbooks or clinical standards of practice for the following:

a. ambulation with crutches or cane,
b. administering cold applications,
c. assessment of athlete with injured ankle or wrist, and
d. basic stretching exercises.

5.10 Pharmacy Technician Skills: Understand principles of and successfully perform **skills related to the Pharmacy Technician**, incorporating rubrics from textbooks or clinical standards of practice for the following:

a. accurately weigh dry compounds using balance or electronic scales or accurately measure liquid using graduated cylinders, pipettes, and/or syringes; and
b. verify prescription.

5.11 ECG Technician Skills: Understand principles of and successfully perform **skills related to the ECG Technician** incorporating rubrics from textbooks or clinical standards of practice for the following:
a. Assess O2 level using a pulse oximeter, and
b. simulate accurate placement of electrodes for a 5-lead ECG on a chart or on a CPR manikin.

6. Data Analysis

6.1 Data Analysis in Health Science: Research the use of data in Healthcare career fields. Include data that is generated internally by businesses, and externally by local communities, state, and the nation. Explore examples of how the data is used, including:
a. Customer/Client use of products and services
b. Demographics of end users
c. Community, state, and national statistics
d. Data that must be reported to another entity.

7. Course Project

7.1 Engineering Design Process: As a team, using the **Engineering Design Process**, create an original medical innovation idea and design using HOSA Medical Innovation resources. The innovation should be something that could lead to an advancement in medicine or the delivery of healthcare.
a. Teams will build a basic prototype of their innovation, provide supporting evidence for why this innovation is needed.
b. Topics could include, but are not limited to:
i. Medical or healthcare innovation,
ii. Emerging technologies in health, or
iii. Advances in medicine
c. **Conduct research** to identify current medical needs or problems that the device could address. **Analyze demographic data** to understand the target population and potential market size. **Evaluate** competitor products and market trends to assess the competitive landscape.
d. **Compile** the elements of the medical innovation idea with data and other artifacts for inclusion in a design portfolio, such as an engineering design notebook, to be updated throughout the program of study.