

Health Science Education

Primary Career Cluster:	Health Science
Course Contact:	CTE.Standards@tn.gov
Course Code(s):	C14H14
Prerequisite(s):	None
Credit:	1
Grade Level:	9
Focus Elective Graduation Requirements:	This course satisfies one of three credits required for an elective focus when taken in conjunction with other Health Science 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 Health Science career cluster. It is also an option for the Level 1 course in the Health Services Administration program of study in the Business cluster.
Aligned Student Organization(s):	HOSA: http://www.tennesseehosa.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/career-and-technical-education/work-based-learning.html
Available 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/career-and-technical-education/student-industry-certification.html .
Teacher Endorsement(s):	577, 720
Required Teacher Certifications/Training:	None
Teacher Resources:	https://www.tn.gov/education/career-and-technical-education/career-clusters/cte-cluster-health-science.html Best for All Central: https://bestforall.tnedu.gov

Course at a Glance

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 & 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.

For more ideas and information, visit Tennessee HOSA at <http://www.tennesseehosa.org/>

Using Work-based Learning 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 1-4** | Invite a malpractice lawyer or paralegal to discuss medicolegal cases.
- **Standards 5-6** | Tour a hospital or clinic
- **Standards 7-9** | In teams, virtually collaborate with a healthcare professional to prepare a health education presentation for a specified age group.
- **Standards 10-21** | Invite an EMT or EMR to present first aid skills for burns, wounds, and bone/joint injuries incorporating infection control measures into the skills.

For more ideas and information, visit <https://www.tn.gov/education/career-and-technical-education/work-based-learning.html>.

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 healthcare skills. This course will serve as a strong foundation for all of the Health Science programs of study as well as the Health Services Administration program of study.

Program of Study Application

This is the foundational course in all programs of study in the Health Science career cluster. It is also an option for the first course in the Health Services Administration program of study in the Business cluster. For more information on the benefits and requirements of implementing these programs in full, please visit the Health Science website at <https://www.tn.gov/education/career-and-technical-education/career-clusters/cte-cluster-health-science.html>

Course Standards

Career Planning

- 1) Synthesize information found in news media, professional journals, and trade magazines to create a report and/or presentation on the historical evolution of healthcare in the United States. Use a timeline or other graphic to illustrate major contributors and developments linking them with modern health care innovations and practices.
- 2) Prepare a paper or electronic career profile for at least one occupation in each of the five health science career areas (biotechnology research, therapeutic services, support services, health informatics, and diagnostic services), to be included in the student's health science portfolio. Draw on print and online sources, such as government occupational profiles, and/or interviews with health care professionals to capture at minimum the following:
 - a. Job description
 - b. Roles and responsibilities
 - c. Essential knowledge and skills needed for the career
 - d. Programs or paths of study available to reach occupational goals, beginning with high school and proceeding through postsecondary
 - e. Required personality traits for the career
 - f. Licensure and credentialing requirements
 - g. Non-educational job requirements such as physical fitness tests, minimum age, and psychological evaluations
 - h. Photographs or digital prints of each career (refer to HOSA Medical Photography guidelines)
- 3) 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.

- 4) 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
 - j. Advanced Directives

Create a chart that includes a definition of the term, and a brief description of how each might be demonstrated in a health care setting. Use the chart in order to participate in a class discussion about notable medicolegal cases.

Healthcare Systems

- 5) Identify the different types of facilities and options for health care delivery in the United States health care delivery system. Compare and contrast the United States health care delivery system with those of two other countries that have high efficiency scores in healthcare as rated by agencies such as the World Health Organization. Create a report and/or presentation highlighting these comparisons.
- 6) Differentiate among the methods of payment for healthcare 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 health care consumers.

Body Function and Structure

- 7) 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.
- 8) 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. Create an artifact that illustrates how each of these factors contributes to the health and wellness of individuals.
- 9) Develop a patient health education presentation surrounding 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 signs and symptoms of the behavior and/or disease, major physical concerns associated with it, preventive measures, treatments, and support systems. Include at least three resources.

Infection Control/Medical Microbiology

- 10) Define chain of infection and provide strategies for how to break each part of the chain to prevent the spread of infection. Conduct a short research project on the effects of practices of sanitation and disinfection on health and wellness, examining the implications for public health. Synthesize findings in a written, oral, or digital presentation, citing evidence from the investigation.
- 11) 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

Foundational Healthcare Skills

- 12) Differentiate between verbal and nonverbal communication and identify common barriers. List specific 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.
- 13) Investigate current safety practices in healthcare including, but not limited to fire, electrical, chemical, and back safety. Research and create a safety training for new health care employees in oral, written, or digital format.
- 14) Review health topics surrounding complementary and alternative medicine such as acupuncture, biofeedback, and herbal treatments. Develop a public service announcement or academic poster presentation intended to inform consumers or health professionals about the specific topic. Include general information, purported benefits, use in the United States, side effects and/or risks, relevant research, cost, and links to more information. Cite evidence from print and digital resources such as research journals, the National Institute of Health, the Mayo Clinic, and Medline Plus.
- 15) 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
 - c. Basic First aid for bone and joint injuries
- 16) 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
 - b. Demonstrate brushing and flossing techniques

- 17) 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)

- 18) 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
 - b. Weighing an ambulatory patient

- 19) 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
 - d. Basic stretching exercises

- 20) 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.
 - b. Verify prescription

- 21) 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
 - b. Simulate accurate placement of electrodes for a 5-lead ECG on a chart or on a CPR manikin.

The following artifacts will reside in the student's portfolio:

- Career Exploration portfolio
- Skills performance rubrics
- Documentation of job shadowing hours
- Examples of written, oral, or digital presentations
- Short research project documents
- Examples of public service announcement scripts, community awareness, health education portfolio

Standards Alignment Notes

*References to other standards include:

- P21: Partnership for 21st Century Skills [Framework for 21st Century Learning](#)
 - Note: While not all standards are specifically aligned, teachers will find the framework helpful for setting expectations for student behavior in their classroom and practicing specific career readiness skills.

Additional Notes

**Informational artifacts include but are not limited to brochures, posters, fact sheets, narratives, essays, and presentations. Graphic illustrations include but are not limited to charts, rubrics, drawings, and mode