



# Public Health and Epidemiology

<b>Primary Career Cluster:</b>	Health Science
<b>Course Contact:</b>	<a href="mailto:CTE.Standards@tn.gov">CTE.Standards@tn.gov</a>
<b>Course Code(s):</b>	C14H17
<b>Prerequisite(s):</b>	<i>Health Science (C14H14)</i>
<b>Credit:</b>	1
<b>Grade Level:</b>	10
<b>Graduation Requirements:</b>	This course satisfies one of three credits required for an elective focus when taken in conjunction with other Health Science courses.
<b>POS concentrator:</b>	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.
<b>Programs of Study and Sequence:</b>	This is the second or third course in the <i>Therapeutic Services</i> program of study.
<b>Aligned Student Organization(s):</b>	HOSA: <a href="http://www.tennesseehosa.org">http://www.tennesseehosa.org</a>
<b>Coordinating Work-Based Learning:</b>	Teachers are encouraged to use embedded WBL activities such as informational interviewing, job shadowing, and career mentoring. For information, visit <a href="https://www.tn.gov/education/career-and-technical-education/work-based-learning.html">https://www.tn.gov/education/career-and-technical-education/work-based-learning.html</a>
<b>Available Student Industry Certifications:</b>	Students are encouraged to demonstrate mastery of knowledge and skills learned in this course by earning the appropriate, aligned department-promoted industry certifications. Access the promoted list <a href="#">here</a> for more information.
<b>Teacher Endorsement(s):</b>	577, 720, 722
<b>Required Teacher Certifications/Training:</b>	None
<b>Teacher Resources:</b>	<a href="https://www.tn.gov/content/dam/tn/education/ccte/cte/cte_resource_health_science.pdf">https://www.tn.gov/content/dam/tn/education/ccte/cte/cte_resource_health_science.pdf</a>

## Course Description

Public Health and Epidemiology is an applied course for students interested in developing a rich understanding of the ways government tracks health related issues and how communities experience

and treat them. Upon completion of this course, students will be able to use research and data to understand the health and wellness of his/her community, state, region, and nation; relate that knowledge to epidemiology and determinants of health; draw key connections between personal health issues and community health issues; defend emergency allocation of resources, and identify professionals who can provide care.

## **Program of Study Application**

This is the second or third course in the Therapeutic Services program of study. For more information on the benefits and requirements of implementing this program 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**

### **Development of the Public Health System and Legislation**

- 1) Gather relevant information from multiple sources concerning the history of community health and disease outbreaks in order to understand how the public health system has evolved. Research notable historical figures, time periods, and/or practices to develop a visual, oral, and/or written presentation that cites specific textual evidence to support analysis.
- 2) Summarize major state and federal legislation related to community health using both primary sources (such as laws) and secondary sources (such as media reports). Construct an argumentative essay describing the effects of these laws on the provision of healthcare in Tennessee and the implications for at-risk populations.

### **Careers**

- 3) Research careers within the public health and epidemiology fields and document educational requirements as well as state and national guidelines governing practicing professionals (such as licensing, certifications, training, compliance). Identify potential training programs, schools, and examinations appropriate to obtain required credentials for a specific occupation.
- 4) Survey the range of skills, competencies, and professional traits required for careers in public health and epidemiology fields to current individual strengths and identify opportunities for personal development. Translate real-time and projected labor market data into narratives to identify local and national employment opportunities and determine areas of growth within public health and epidemiology fields.

### **Legal and Ethical Issues**

- 5) Summarize and explain the Americans with Disabilities Act of 1990 (ADA), the American Hospital Association's "Patient Bill of Rights," the Omnibus Budget Reconciliation Act of 1990 (OBRA), and the Patient Self-Determination Act of 1990 (PSDA) to a patient/client or classmate. Highlight the rights of a patient or client, depending on differences in age, mental

status, and competency. Cite the above documents in clear, coherent language to describe the relationships among concepts of patient rights.

- 6) Summarize the Health Insurance Portability and Accountability Act (HIPAA) within the context of mental health, infectious disease, and community health treatment relating key provisions of the act to patient rights. Construct an argumentative essay contrasting patient/client rights with a community's right to know about dangerous mental health clients or persons with communicable diseases, citing evidence from legislation and news articles.
- 7) Subdivide sections of the Patient Protection and Affordable Care Act of 2010 (ACA) related to community health and preventive medicine, synthesizing a variety of professional, journalistic, and medical perspectives on the ramifications of the act for individuals and communities. Select one of the preventive guidelines listed in the prevention/wellness section of the law and develop a plan to implement it for a given community. For example, to increase access to fresh produce, a plan may include a gap analysis, list of stakeholders, budget, and timeline for activities using domain-specific language.

### **Biostatistical Data**

- 8) Distinguish between the terms endemic, epidemic, and pandemic. Analyze the factors involved in the spread of disease, such as the increase in world travel among socially mobile populations. Research global initiatives currently in place to prevent the spread of diseases/disorders such as influenza, Pertussis, or HIV/AIDS.
- 9) Identify social and community health issues prevalent in a specific community or region of the state. Research social determinants impacting a specific health issue, including but not limited to:
  - a. Developmental stage
  - b. Risk-taking behavior
  - c. Race/ethnicity
  - d. Environment
  - e. Geography
  - f. Social status
  - g. Income
  - h. Other factors that contribute to diseases and disorders

Summarize findings in a graphic illustration or informational artifact in order to participate in a discussion comparing and contrasting health of communities with different demographic data.

- 10) Public health surveillance is a mechanism that public health agencies use to monitor the health of communities. Describe the types of data commonly collected by national health organizations and national government agencies, including the key parameters (i.e., fertility, life expectancy, infant mortality rates) most often reported in the analysis of public health. Demonstrate the ability to interpret and communicate results from public health surveillance analyses, applying basic statistical concepts such as measurements of central

tendency (mean, median, mode), measurements of spread (range, variance, standard deviation), and changes over time.

- 11) Evaluate how biostatistical data is used to identify national health priorities, disparities, and epidemiological transitions, and discuss how advances in public health surveillance have changed the delivery of key healthcare services (such as the need for family planning, vaccinations, or disease treatment). Furnish examples of data-driven policy changes informed by the collection and analysis of health surveillance data. For example, examine a case study of how the Centers for Disease Control responded to the 2014-16 Ebola outbreak and threat to the United States.
- 12) Examine the epidemiologic, genetic, and/or biological basis of at least one of the diseases or disorders in each of the areas listed below. Compare the prevalence of the disease/disorder across a variety of populations and countries. Drawing on skills learned in biostatistical data analysis, determine the factors that contribute to higher or lower prevalence in a given population or area of the country.
  - a. Infectious Diseases
  - b. HIV/AIDS
  - c. Neurodevelopment disabilities
  - d. Cancer
  - e. Cardiovascular Disease
  - f. Diabetes
  - g. Dementia

### **Emergency Allocation of Resources and Communication**

- 13) Select public health risks and emergencies that impact healthcare delivery. Using Tennessee's Crisis Standards of Care, create a flow-chart of how local, state, and/or federal governments coordinate to handle requests for emergency assistance related to human resources, supplies/equipment, and medical countermeasures.
- 14) Analyze emergency communication using resources such as the Centers for Disease Control's Crisis Emergency Risk Communication plan. Create a mock press release or script using recommendations for successful emergency communication related to a recent disaster or crisis.
- 15) Identify at risk population groups that need customized messaging and healthcare delivery during emergencies due to disease specific needs, medical device needs, limited access to care/support, or language barriers. Develop an informative/explanatory text discussing the needs of one specific group, citing local incidence information as compared to state, region, and national data. Include existing policies or plans that target the needs of the group, and healthcare interventions available.

### **Treatment**

- 16) Compare and contrast the health challenges characteristic of urban and rural settings. Analyze factors such as disease management, social and behavioral interventions, nutrition,

service disparities, and availability of preventive measures like screenings. Debate the key challenges to the provision of services across the state.

- 17) An important aspect of the study of epidemiology is to identify factors that place certain populations at a higher risk for developing diseases and disorders. Compare and contrast the two primary models of disease causation: the epidemiologic triad and Rothman's causal pies. Demonstrate understanding by completing an epidemiologic triad chart and a causal pie for a variety of diseases and disorders.
- 18) Research the mitigation of disease severity through implementation of different types of interventions including medical countermeasures (antibiotics, vaccines) and non-pharmaceutical interventions (community mitigation steps). Develop a detailed treatment plan with goals and objectives, medical countermeasures, and non-pharmaceutical interventions for one of the health issues studied in this course. Cite specific textual evidence to defend elements of plan.
- 19) 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.

### **Final Project**

- 20) Drawing on material learned in this course, conduct a needs assessment for a target population in both rural and urban settings affected by a health issue such as diabetes, cancer, HIV/AIDS, or other disease/disorder. Retrieve relevant health surveillance data related to the prevalence of the disease/disorder and the environmental and genetic factors that contribute to the problem. Synthesize research on existing policies, programs, and initiatives currently or formerly in place to alleviate the problem, and compile the results of the needs assessment into a written report supported by graphical and statistical aids.
- 21) Building off the needs assessment conducted in standard 20, create a plan to address the needs of the target population. Consider a range of potential policy solutions, weighing the costs and benefits of each, including the obstacles to implementation. Then advance a recommendation for one of the solutions, outlining a strategy to engage the appropriate agencies, decision-makers, and other stakeholders.

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

- a. Standard 6 HIPAA Essay
- b. Standard 17 Epidemiologic triad charts and Rothman's Causal Pies
- c. Standard 20 Needs Assessment
- d. Standard 21 Needs Assessment Recommendations

### **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.