

Bristol Public Schools Office of Teaching & Learning

Department	Career and Technical Education (CTE)
Department Philosophy	Bristol schools believe in providing students with rich opportunities to ensure career and college readiness. These opportunities include development of skills, practices, and exploration within several career clusters and pathways. Each CTE curriculum enables students to acquire and strengthen leadership, literacy, numeracy, decision-making, computer skills, and technology skills through 11 career clusters and pathways: (1) architecture and construction, (2) business management, (3) education and training, (4) finance, (5) health science, (6) hospitality and tourism, (7) information technology, (8) manufacturing, (9) marketing, (10) transportation, distribution and logistics, and (11) STEM. Each career cluster provides students with access to hand-on experiences that will allow for students development of skills that will support successful transition to their post secondary experiences.
Course	ECE Introduction to Allied HealthProfessions
Course Description for Program of Studies	Introduction to Allied Health Professions is a half year course designed as an introduction to the field of Allied Health. The course will inform students about the five pathways in allied health fields, certifications and post-secondary choices for careers in allied health. Students will explore therapeutics, health information, diagnostics, support services, and research and development. Guest speakers from diverse backgrounds will be invited from each of the pathways to share their experience in terms of education, training, and on the job experience. Students will also have the opportunity to experience each field in terms of activities, projects, presentation and research. Students who successfully complete this course with a "D" or better will receive 1.0 credits from the University of Connecticut.
Grade Level	11-12
Pre-requisites	Beginning 2022-23, Students must have completed a Grade 9 or 10 Health professions introductory course.
Credit (if applicable)	BPS 0.5/UConn 1.0

UNIT 1: Introduction to Allied Health Careers

UNIT 2: Therapeutic Pathway

UNIT 3: Diagnostic Pathway

UNIT 4: Health Informatics Pathway

UNIT 5: Support Services Pathway

UNIT 6: Biotechnology Research and Development Pathway

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UNIT 1: Introduction to Allied Health Careers

Advance CTE Standard	Performance Elements	Key Concepts/Big Ideas	Academic Vocabulary
HL 2.4: Identify and explain key systems of the health care delivery system.	Develop a definition of allied health	Students will develop a working definition of allied health including key systems involved	Allied Health, five pathways, healthcare systems, JCAHO, AMA, DPH, ONC,USDHHS, PPACA,Medicare, health insurance
HL 3.2: Demonstrate personal safety practices.	 Manage a personal exposure incident in compliance with OSHA regulations. Apply principles of body mechanics and ergonomics. 	 Minimize exposure to safety hazards OSHA compliance in a healthcare setting 	OSHA, ergonomics, personal protective equipment, MSDS, chemical hygiene, OSHA standards
HL 5.2: Describe legal practices employed by health care workers.	 Manage clients' rights according to the Patients' Bill of Rights. Manage confidentiality according to the Health Information Portability Access Act (HIPAA). 	HIPAA compliancePatient's rights	Patient Bill of Rights, HIPAA, CLIA, CDC, informed consent, DNR, living will, malpractice
HLC01 ACADEMIC FOUNDATIONS: Achieve additional academic knowledge and skills required to pursue the full range of career and postsecondary education opportunities within a career cluster.	 Use a knowledge of human structure and function to conduct health care roles. Use a knowledge of diseases and disorders to conduct health care roles. 	 Analyze the interdependence of the body systems as they relate to wellness, disease, disorders, therapies, and care rehabilitation. Relate to Allied Health Professions 	

UNIT 1: ESSENTIAL QUESTIONS

In this unit, students will learn practices common to all allied health careers.

- What is allied Health and how do people and systems work together to support patients?
- What is HIPAA and why is it important to all healthcare settings?
- What legal rights do patients have?
- Why is OSHA important in a healthcare setting?

CTE Standard	Learning Targets: I can	Summative Assessment Strategy	Lesson Progression and Connection to ELA/Math CCSS	Common Learning Experiences and Assessments
HL 2.4	I can collaborate with peers and develop a definition of allied health, including the key systems of health care delivery involved.	Selected Response Constructed Response x Performance (P) Observation	■ The students will work together to define allied health. health. he	 Students will collaborate on a working definition of allied health
HL 3.2	 I can identify potential safety hazards in an allied health setting. I can design an appropriate response to a safety scenario. I can design an allied health space that meets ergonomic standards. I can identify and explain the major components of the HIPAA. I can work with my peers to develop a patient Bill of Rights. 	Selected Response Constructed Response x Performance (P) Observation	Lesson Progression and Standards Connection: • The students will use OSHA standards to design a healthcare setting of their choice ie;doctor office, patient room, nursing station • The students will unpack and make sense of HIPAA components and standards.	Mandatory Lessons/Activities: Design of a healthcare setting Chemical exposure scenario HIPAA Scenarios Develop Patient Bill of Rights
Pacing:	3 blocks		CCSS Connections: CCSS.ELA-LITERACY.SL.11-12.6 • Adapt speech to a variety of contexts and tasks, demonstrating a command of formal English when indicated or appropriate. (See grades 11-12 Language standards 1 and 3 here for specific expectations.)	Assessments: • Poster depicting allied health definition • Students will be able to identify a potential hazard

					situation and identify ways of mitigating risk • Students will design a healthcare setting of their choice that mitigates safety risks • Students will develop "HIPAA scenarios" that will demonstrate HIPAA compliance
HL1	 I can converse with allied healthcare professions, so I can better understand their career/profession. I can reflect on a career path in terms of education, training and certification. 	x	Selected Response Constructed Response Performance Observation	Lesson Progression and Standards Connection: • A guest from health care administration will discuss their career pathway and the students will complete a reflection of the discussion • Introduction of culminating project to include an emergency room visit for a disease of the students choice and encounters with staff from each of the five pathways • Begin digital health science career portfolio. Students will use "Google Sites", Portfolio to collaborate with peers	 Mandatory Lessons/Activities: Guest Speaker Begin digital portfolio using google sites
Pacing:	3 block			CCSS Connections: ■ CCSS.ELA-LITERACY.SL.11-12.1 Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11-12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.	Assessments: • Guest speaker reflection • "Begin Health Career Portfolio" • UConn Quiz

ADDITIONAL CONSIDERATIONS						
COMMON MISCONCEPTIONS PRIOR KNOWLEDGE NEEDED TO MASTER STANDARDS FOR THIS UNIT MASTERY ADVANCED STANDARDS FOR STUDENTS WHO HAVE DEMONSTRATED PRIOR MASTERY OPPORTUNITIES THE UNIT						
RESOURCES						

https://cte.careertech.org/sites/default/files/CCFrame-HealthScience.pdf

https://cte.careertech.org/sites/default/files/StudentInterestSurvey-English.pdf

https://cte.careertech.org/sites/default/files/HL-CCTC-PerformanceElements.pdf

http://www.hosa.org/

https://www.g-wonlinetextbooks.com/introduction-health-science-2016/1

UNIT 2: Therapeutic Pathway

Advance CTE Standard	vance CTE Standard Performance Elements		Academic Vocabulary	
HL-THR 1.1: Employ effective oral communication techniques when responding to patient questions and concerns.	 Demonstrate empathy for patients/clients. How is empathy tied to patient outcomes? 	 Compare and contrast empathy vs sympathy How are empathy and sympathy important for patient outcomes in a therapeutic setting 	Empathy, sympathy, patient outcomes, motivational interview, patient history, patient communication ,	
HL-THR 3.1: Monitor patient/client using protocols for assessing, monitoring and reporting health status	 Analyze and assess patient/client response. Assess vital signs and determine if results are normal Assess the need for follow-up and alternative care to treatment plan. 	Vital signs as a way to triage, measure,monitor patient status	Vital Signs;respirations, pulse, blood pressure, temperature,pain, oxygen saturation, triage	
HLC01 • ACADEMIC FOUNDATIONS: Achieve additional academic knowledge and • skills required to pursue the full range of career and postsecondary education opportunities within a career cluster.	 Use a knowledge of human structure and function to conduct health care roles. Use a knowledge of diseases and disorders to conduct health care roles. 	 Therapeutic pathway basics Students will learn the requirements for a career in the therapeutic pathway as well as participate in a discussion with a guest speaker from this pathway 	ROM(range of motion), therapeutic, audiologist, massage therapist, athletic trainer, respiratory therapist, speech-language pathologist, CNA Certificate, associates degree, bachelor's degree, doctoral degree	

UNIT 2: Therapeutic Pathway

In this unit students will learn about the therapeutic pathway for allied health fields. Students will perform routine procedures to an allied health setting. Students will have had the opportunity to engage with a guest speaker who currently works in the field.

- What allied health careers fall within the therapeutic pathway?
- Why is empathy essential to the therapeutic pathway?
- Why is it so important to get a good patient history?
- What skills are common throughout the therapeutic pathway?

CTE Standard	Learning Targets: I can	Su	ımmative Assessment Strategy	Lesson Progression and Connection to ELA/Math CCSS	Common Learning Experiences and Assessments
HL-THR 1.1	 I can recognize the difference between empathy and sympathy. I research the connection between empathy and improved patient outcomes. 	x	Selected Response (SR) Constructed Response (CR) Performance (P)	 Lesson Progression and Standards Connection: Students will develop a definition of empathy after watching Brene Brown video Students will reflect on why empathy leads to improved patient outcomes Student will research empathy in healthcare and write a brief paragraph on the connection between empathy and patient outcomes 	Mandatory Lessons/Activities: ● Brene Brown empathy/sympathy video
Pacing:	2 block		Observation (O)	CCSS Connections: ■ CCSS.ELA-LITERACY.RST.11-12.8 Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.	Assessments: • Students create and perform patient scenarios illustrating empathy • Empathy research assignment
HL-THR 3.1	 I can evaluate and appraise appropriateness of information. I can evaluate patient and other client responses to treatment and/or procedure. I can document test results accurately and appropriately. I can interpret patient test data and recognize abnormalities. 	x	Selected Response (SR) Constructed Response (CR) Performance (P)	Lesson Progression and Standards Connection: • Students will learn how to perform and record vital signs and rotate through stations to practice their skills • Students will recognize abnormal values • STudents will record results accurately	Mandatory Lessons/Activities: ● Vital signs stations-pulse, blood pressure, temp, O₂ saturation, respirations
Pacing:	4 Blocks		Observation (O)	CCSS Connections: ● CCSS.ELA-LITERACY.RST.11-12.3	Assessments: • Students will be assessed by

			Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.	the instructor for accuracy and proper recording of results.
HL1-	 I can identify and investigate careers in the therapeutic pathway. I can converse with allied healthcare professions, so I can better understand their career/profession. I can reflect on a therapeutic career path in terms of education, training and certification. 	Selected Response Constructed Response Performance x Observation	 Lesson Progression and Standards Connection: A guest from this pathway will discuss their career pathway and the students will complete a reflection of the discussion Students will choose a therapeutic field and complete a project detailing skills, education, training, certificates required for the field. 	Mandatory Lessons/Activities: • Prepare questions for a Guest speaker from therapeutic pathway • Continue work on culminating project (Portfolio) • Therapeutic Pathway Presentation
Pacing:	1.5 blocks		CCSS Connections:	Assessments: UConn Quiz Guest Speaker Reflection Presentation of therapeutic pathway field of choice Completion of part 2 Health Science Portfolio

ADDITIONAL CONSIDERATIONS						
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RESOURCES						
https://cte.careertech.org/sites/default/files/CCFrame-HealthScience.pdf						

https://cte.careertech.org/sites/default/files/StudentInterestSurvey-English.pdf

UNIT 3: Diagnostic Pathway

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Advance CTE Standard	Performance Elements	Key Concepts/Big Ideas	Academic Vocabulary
HL-DIA 5.1: Perform specific procedures to create diagnostic results.	 1-Recognize scope of practice to be employed. 2-Perform procedure competently within scope of practice. 3-Perform procedure according to protocol. 	Students will perform diagnostics tests	Urinalysis, blood glucose, clinical laboratory, x-ray, endoscopy, radiologic technologist, ultrasound, diagnostic, scope of practice, blood chemistry, blood typing, Rh factor, MRI, nuclear medicine, histotechnologist, fluoroscopy,phlebotomy Differential diagnosis, precision, accuracy, troubleshooting
HL-DIA 5.2: Document diagnostic results.	 1-Summarize diagnostic results. 2-Communicate diagnostic results to a health care team. 3-Interpret diagnostic results and offer a differential diagnosis 	 Students will interpret a variety of diagnostic results and offer a possible diagnosis that makes sense based on diagnostic values 	Normal values, urinalysis, blood chemistry, CBC, MRI, nuclear medicine, differential diagnosis, pathology, appendicitis, urinary tract infection, diabetes mellitus, sepsis, parasites
HLC01 ACADEMIC FOUNDATIONS: Achieve additional academic knowledge and skills required to pursue the full range of career and postsecondary education opportunities within a career cluster.	 Use a knowledge of human structure and function to conduct health care roles. Use a knowledge of diseases and disorders to conduct health care roles. 	 Students will learn the basics of diagnostic pathway Students will learn the requirements for a career in the diagnostic pathway as well as participate in a discussion with a guest speaker from this pathway 	Laboratory Technician, Radiology, Histologist, Cytotechnologist, Geneticist

UNIT 3: ESSENTIAL QUESTIONS

In this unit, students will learn about the diagnostic pathway for allied health fields. Students will perform hands on simulations of typical diagnostic procedures done in an allied health setting. Students will have had the opportunity to engage with a guest speaker who currently works in the field.

- What is the diagnostic health pathway?
- How does someone in the diagnostic pathway work with other healthcare workers to diagnose diseases?
- What do people do that work in the diagnostic pathway?
- What education and certifications do I need to work in the diagnostic pathway?

CTE Standard	Learning Targets: I can	Summative Assessment Strategy				Lesson Progression and Connection to ELA/Math CCSS	Common Learning Experiences and Assessments
5.1 Pacing:	I can perform diagnostic procedures with precision and accuracy. I can record diagnostic results and communicate findings to fictional		Constructed Response (CR) Performance (P)	Lesson Progression and Standards Connection: • Students will perform simulated procedures that would be typical in the diagnostic pathway CCSS Connections: CCSS.ELA-LITERACY.RST.11-12.3 • Follow precisely a complex multistep procedure when carrying out experiments, taking	Mandatory Lessons/Activities: • Paxton Patterson lab rotations. Students will perform simulated diagnostic tests • Urinalysis • Endoscopy • X-Ray • Blood typing Assessments: • Simulated diagnostic tasks and communication.		
5.2	 I can interpret diagnostic results and offer a plausible differential 		Selected Response	measurements, or performing technical tasks; analyze the specific results based on explanations in the text. Lesson Progression and Standards Connection: • Students will be presented with a case and will	Mandatory Lessons/Activities: ● Case histories using diagnostic		
	diagnosis.	×	(SR) Constructed Response	offer differential diagnosis and communicate diagnostic tests that would confirm or rule out diagnosis	information from different fields		
Pacing:	2 Blocks	х	(CR) Performance (P)	CCSS Connections: • CCSS.ELA-LITERACY.RST.11-12.9 • Synthesize information from a range of	Assessments: • Case history completion		

		Observation (O)	sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.	
HL1	 I can identify and investigate careers in the diagnostic pathway. I can converse with allied healthcare professions, so I can better understand their career/profession. I can reflect on a career path in terms of education, training and certification 	Selected Response Constructed Response X Performance x Observation	 Lesson Progression and Standards Connection: A guest from this pathway will discuss their career pathway and the students will complete a reflection of the discussion Students will choose a diagnostic field and complete a project detailing skills, education, training, certificates required for the field. 	 Mandatory Lessons/Activities: Prepare questions for a Guest Speaker from Diagnostic Pathway Continue work on culminating project (portfolio) Diagnostic Pathway addition to Portfolio
Pacing:	1.5 blocks		CCSS Connections: ■ CCSS.ELA-LITERACY.SL.11-12.1 Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11-12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. ■ CCSS.ELA-LITERACY.W.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1-3 above.)	Assessments: UConn Quiz Guest Speaker Reflection Presentation of diagnostic pathway field of choice Completion of part 3 Health Science Portfolio

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UNIT 4: Health Informatics Pathway

Advance CTE Standard	Performance Elements	Key Concepts/Big Ideas	Academic Vocabulary
HL 2.2: Explain the concept of system change as it applies to the healthcare environment.	 1-Analyze the cause and effect on health care system change based on the influence of technology, epidemiology, bioethics, socio-economics and various forms of complimentary (nontraditional) medicine. 	 Students will be exposed to the field of epidemiology in terms of health determinants. Students will explore racism in healthcare systems and provide a plan to address an area of their choice (ie. fetal/maternal health). 	Medical literacy, epidemiology, statistics, health determinants, health disparities, cultural competence, medical coding, public health, EHR(electronic health record),institutional racism
HLC01 ACADEMIC FOUNDATIONS: Achieve additional academic knowledge and skills required to pursue the full range of career and postsecondary education opportunities within a career cluster.	 Use a knowledge of human structure and function to conduct health care roles. Use a knowledge of diseases and disorders to conduct health care roles. 	 Students will learn the requirements for a career in Health Informatics Students will learn the requirements for a career in the health informatics pathway as well as participate in a discussion with a guest speaker from this pathway 	Admitting clerk, epidemiologist, health educator, medical illustrator, medical coder

UNIT 4: ESSENTIAL QUESTIONS

In this unit students will learn about the health informatics pathway for allied health fields. Students will analyze health informatics to identify barriers in access to health services. Students will have had the opportunity to engage with a guest speaker who currently works in the field.

- What allied health careers fall within the health informatics pathway?
- Why did the CDC declare racism a public health issue?
- Does local healthcare data support the CDC declaration?
- How can we mitigate the inequities in the healthcare system locally/nationally?

CTE Standard	Learning Targets: I can	Summative Assessment Strategy	Lesson Progression and Connection to ELA/Math CCSS	Common Learning Experiences and Assessments
HL 2.2	 I can analyze public health data to identify racial disparities related to access to healthcare. I can collaborate with community groups to determine a course of action to raise awareness about the issue. 	Selected Response (SR) Constructed Response (CR)	Lesson Progression and Standards Connection: • Students will access data/informatics that showcase racial disparities in health care. • Students will design a plan to mitigate this issue raised by the healthcare data analyzed.	Mandatory Lessons/Activities: • Health care access data analysis project • Community Awareness Project
Pacing:	4 blocks	Performance (P) Observation (O)	CCSS Connections: CCSS.ELA-LITERACY.RST.11-12.9 • Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.	Assessments: • Completion of Community awareness Project • Presentation to Bristol Public Health
HL1	 I can identify and investigate careers in the health informatics pathway. I can converse with allied healthcare professions, so I can better understand their career/profession. I can reflect on a career path in terms of education, training and certification 	Selected Response Constructed Response Performance x Observation	Lesson Progression and Standards Connection: • A guest from this pathway will discuss their career pathway and the students will complete a reflection of the discussion • Students will choose a "Community Awareness Project" based on epidemiologic data from the DPH about Bristol and surrounding towns	Mandatory Lessons/Activities: Community Awareness Project Prepare questions for a Guest Speaker from the health informatics pathway.
Pacing:	1.5 blocks		CCSS Connections: ■ CCSS.ELA-LITERACY.SL.11-12.1 Initiate and participate effectively in a range of	Assessments: ● UConn Quiz

			collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11-12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. • CCSS.ELA-LITERACY.W.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1-3 above.)	 Guest Speaker Reflection Presentation of Community Awareness Project Completion of part 4 Health Science Portfolio
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ADDITIONAL CONSIDERATIONS					
COMMON MISCONCEPTIONS	PRIOR KNOWLEDGE NEEDED TO MASTER STANDARDS FOR THIS UNIT	ADVANCED STANDARDS FOR STUDENTS WHO HAVE DEMONSTRATED PRIOR MASTERY	OPPORTUNITIES FOR STUDENT-DIRECTED LEARNING WITHIN THE UNIT		

RESOURCES

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UNIT 5: Support Services Pathway

Advance CTE Standard	Performance Elements	Key Concepts/Big Ideas	Academic Vocabulary
HL-SUP 2.1: Perform cleaning and decontamination tasks using best practices for eliminating pathogenic organisms.	 Demonstrate various decontamination techniques and procedures. Demonstrate knowledge of standard precaution guidelines. Select procedures and precautions to be followed when using chemicals. Demonstrate techniques for mechanical and manual cleaning procedures. Evaluate potential causes and methods of transmitting infection. Integrate infection control standards with relevant activities and procedures. 	 Chain of infection in allied health fields Appropriate PPE for likely exposure Differentiate environments in a healthcare setting in terms of exposure to pathogens Demonstrate appropriate cleaning for situation 	Chain of infection, causative agent, mode of transmission, reservoir, portal of entry, portal of exit, susceptible host, aseptic, sterile, clean, autoclave, spores, nosocomial, hospital acquired infection, universal precautions, sterile technique, blood borne pathogens, personal protective equipment, asepsis, sterile,
HLCO1 ACADEMIC FOUNDATIONS: Achieve additional academic knowledge and skills required to pursue the full range of career and postsecondary education opportunities within a career cluster.	 Use a knowledge of human structure and function to conduct health care roles. Use a knowledge of diseases and disorders to conduct health care roles. 	 Students will learn the requirements for a career in support services as well as participate in a discussion with a guest speaker from this pathway 	Environmental Services, Facilities manager

UNIT 5: ESSENTIAL QUESTIONS

In this unit, students will learn about the support services pathway for allied health fields. Students will use the chain of infection phenomenon to understand the role of support services in preventing an outbreak. Students will have had the opportunity to engage with a guest speaker who currently works in the field.

- What allied health careers fall within the support services pathway?
- How is the chain of infection relevant to every health care field?

CTE Standard	Learning Targets: I can	Summative Assessment Strategy	Lesson Progression and Connection to ELA/Math CCSS	Common Learning Experiences and Assessments
HL-SUP 2.1	 I can practice infection control procedures. I can investigate and practice appropriate cleaning, disinfecting and sterilizing processes. I can compare and contrast medical and surgical asepsis. 	Selected Response (SR) Constructed Response (CR) Performance (P) Observation (O)	 Lesson Progression and Standards Connection: Students will be able to identify the chain of infection in terms of cholera. Students will design a village in terms of breaking the chain of infection for cholera Students will demonstrate proper technique in terms of donning and doffing gloves Students will demonstrate proper handwashing technique and describe how this can decrease nosocomial infections 	Mandatory Lessons/Activities: "The Story of Cholera" Glo-germ laboratory Donning and Doffing gloves with shaving cream
Pacing:	4 blocks		CCSS Connections: CCSS.ELA-LITERACY.WHST.11-12.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.	Assessments: • Anti-cholera village design • Demonstration of correct technique in donning and doffing gloves • Demonstrate proper handwashing technique
HL1	 I can identify and investigate careers in the support services pathway. I can converse with allied healthcare professions, so I can better understand their career/profession. I can reflect on a career path in terms of education, training and certification 	Selected Response (SR) x Constructed Response (CR) x Performance (P) Observation (O)	Lesson Progression and Standards Connection: •	Mandatory Lessons/Activities: • Prepare questions for a Guest Speaker Discussion-Support Services • Continue work on culminating student allied health professions career portfolio.

Pacing:			CCSS Connections: CCSS.ELA-LITERACY.SL.11-12.1 ■ Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11-12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. CCSS.ELA-LITERACY.W.11-12.4 ■ Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1-3 above.)	Assessments: UConn Quiz Guest Speaker Reflection Completion of part 5 Health Science Portfolio
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ADDITIONAL CONSIDERATIONS					
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RESOURCES

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UNIT 6: Biotechnology Research and Development Pathway

Advance CTE Standard	Performance Elements	Key Concepts/Big Ideas	Academic Vocabulary	
HL-BRD 2.3: Apply genetic principles to biotechnology.	 Describe the basic structure of a chromosome. Construct a karyotype with human chromosomes. Differentiate the genetic inheritance of a dominant homozygous trait (e.g. dwarfism) from a heterozygous disease (e.g., sickle cell anemia). 	 Students will describe the basic structure of a chromosome and cut and construct a human karyotype. Students will construct a normal and abnormal karyotype. 	Chromosome, karyotype, DNA, RNA, sugar phosphate backbone, nucleotide, amino groups, heterozygous, homozygous, genetic trait	
HL-BRD 3.1: Identify techniques used in biotechnology.	 Describe the following techniques: genetic engineering 	 Students will be exposed to biotechnology through a hands on lab "pGLO" transformation Students will have a guest speaker from the biotechnology field 	Biotechnology, Genetic engineering, recombinant DNA, bioinformatics, bioluminescence, genes, transformation, phenotype, genotype, genome, personalized medicine	
HL-BRD 6.1: Explain biotechnological implications on society.	 Differentiate between morality and ethics and the relationship of each to biotechnology healthcare product development. Discuss bioethical issues related to biogenetic products. 	 Students will research genetic technology that is in use or about to be in use and discuss the ramifications and morality associated with the technology. Ex-"designer babies" 	Ethics, morality, biotech products,	
HLC01 ACADEMIC FOUNDATIONS: Achieve additional academic knowledge and skills required to pursue the full range of career and postsecondary education opportunities within a career cluster.	 Use a knowledge of human structure and function to conduct health care roles. Use a knowledge of diseases and disorders to conduct health care roles. 	 Students will learn the requirements for a career in biotechnology research and development as well as participate in a discussion with a guest speaker from this pathway 	Genomics, Bioinformatics, Molecular Biology, Biostatistician,	

UNIT 6: ESSENTIAL QUESTIONS

In this unit students will learn about the biotechnology research and development pathway for allied health fields. Students will use their knowledge of chromosomes to understand the role of genetics in biotechnology research and development. Students will have the opportunity to engage with a guest speaker who currently works in the field.

- What allied health careers fall within the biotechnology research and development pathway?
- What is the history of genetic engineering?
- How is it already used in medicine?
- What are the ethical considerations of genetic engineering?

CTE Standard	Learning Targets: I can	Summative Assessmen Strategy	Lesson Progression and Connection to ELA/Math CCSS	Common Learning Experiences and Assessments
HL-BRD 2.3: Apply genetic principles to biotechnology	 I can create an explanatory model of a human chromosome. I can describe a genetic disease in terms of homozygous, heterozygous, dominant and recessive traits. I can describe chromosomal mutation and predict its impact. 	Selected Response (SR) x Constructed Response (CR) x Performance (P)	 Students will choose their own medium and create an advertisement for a human chromosome of their choosing. Students will create a superhero origin story based on a chemical incident that changes the chromosome that they studied in their poster 	 Chromosome advertisement project Karyotype comic book
Pacing	3 blocks	Observation (O)	CCSS Connections:	Assessments: • Poster completion • Genetic Disease Presentation • Karyotype comic book completion
HL-BRD 3.1: Identify techniques used in biotechnology	 I can investigate the genetic transformation of the pGLO gene. I can analyze data from the pGLO laboratory investigation. I can use data from the pGLO investigation as evidence when devising a conclusion. 	Selected Response (SR) x Constructed Response (CR) x Performance (P)	Lesson Progression and Standards Connection: Students will perform the pGLO lab with a partner and complete the lab report. Students will be able to see genetic transformation in terms of pGLO gene	Mandatory Lessons/Activities: • pGLO Laboratory • Written pGLO lab analysis
Pacing:	3 blocks	Observation (O)	CCSS Connections: CCSS.ELA-LITERACY.RST.11-12.3	Assessments: ● Completion of pGlo lab report

				Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.	 Written reflection on ethical considerations in genetic engineering.
HL-BRD 3.2: Identify trends in the field of biotechnol ogy.	 I can predict how nanotechnology, bioinformatics, proteomics, genomics and transcriptomics will create new career opportunities. I can identify how the above career opportunities will impact health care environments. 	x	Selected Response (SR) Constructed Response (CR) Performance (P)	 Lesson Progression and Standards Connection: Students will discuss the biotechnology field in terms of education, training, certifications with a person who works in the field. 	Mandatory Lessons/Activities: • Guest Speaker
Pacing:	3 blocks		Observation (O)	CCSS Connections:	Assessments: • UConn Quiz • Guest Speaker Reflection • Completion of part 6 Health Science Portfolio • Completion of culminating project

ADDITIONAL CONSIDERATIONS								
COMMON MISCONCEPTIONS	PRIOR KNOWLEDGE NEEDED TO MASTER STANDARDS FOR THIS UNIT	ADVANCED STANDARDS FOR STUDENTS WHO HAVE DEMONSTRATED PRIOR MASTERY	OPPORTUNITIES FOR STUDENT-DIRECTED LEARNING WITHIN THE UNIT					

RESOURCES

https://cte.careertech.org/sites/default/files/CCFrame-HealthScience.pdf

https://cte.careertech.org/sites/default/files/StudentInterestSurvey-English.pdf

https://cte.careertech.org/sites/default/files/HL-CCTC-PerformanceElements.pdf http://www.corestandards.org/ELA-Literacy/RST/9-10/