

**MT. DIABLO UNIFIED SCHOOL DISTRICT  
COURSE OF STUDY**

<b>COURSE TITLE:</b>	<b>Healthcare Essentials</b>
<b>COURSE NUMBER:</b>	<b>008505</b>
<b>CBEDS NUMBER:</b>	<b>7922</b>
<b>DEPARTMENT:</b>	<b>CTE</b>
<b>LENGTH OF COURSE:</b>	<b>Year</b>
<b>CREDITS PER SEMESTER:</b>	<b>5 Credits</b>
<b>GRADE LEVEL(S):</b>	<b>11th</b>
<b>REQUIRED OR ELECTIVE:</b>	<b>Elective</b>

**PREREQUISITES:** Biology (Required)  
Anatomy and Physiology (Recommended)  
Algebra, Math I, or higher level math (Required)  
Co-requisites:  
Anatomy and Physiology (Recommended)  
Geometry, Algebra II, Math II, Math III, or higher level math (Required)

**BOARD OF EDUCATION ADOPTION: (Date of Action Meeting)**

**COURSE DESCRIPTION:** *Healthcare Essentials* is a college preparatory laboratory science course with Next Generation Science Standards integrated with the Patient Care Health Pathway standards. The course is designed for the students to have a basic exposure to the most common Allied Health Professions and the clinical, diagnostic and therapeutic skills for an entry level job in the healthcare industry.

**COURSE PURPOSE:** Healthcare Essentials is a course designed to enhance student understanding of Biology, Chemistry and Physics within the context of caring for patients. Students will investigate the many ways disease can affect the body and the community, and propose plans for prevention. Students will learn how to obtain relevant health information from patients, conduct a physical exam, and then diagnose an illness and then propose a course of treatment. Students will be learning hands-on skills and behaviors that will prepare them for careers and future coursework in health care.

**COURSE OUTLINE:** Course content:

**Unit One- Introduction to Patient Care:** In this unit, students will be introduced to the integrated systems approach to health care delivery services: prevention, diagnosis, pathology, and treatment. Students will detail the scope of practice and related skills within prevention, diagnosis, pathology, and treatment occupations. They will describe the various roles and responsibilities of health care workers as team members. Students will interact with various healthcare personnel to understand the different fields and will explore careers interesting to them.

**Unit Two - U.S. Healthcare:** Students will illustrate the value of preventive and early intervention in relationship to health care practices by comparing case studies of patients who receive preventative care versus similar patients who do not. They will be investigating both the difference in terms of financial burden, and in health outcomes. Students will gain a precursory understanding of reimbursement systems in relationship to the delivery of patient care by calculating out-of-pocket expenses for different patients with varying health

insurance plans and for those without insurance. This unit will culminate with an in-depth investigation into the US healthcare system.

**Unit Three - Pathophysiology:** In this unit, students will review the basic structure and function of the human body and relate normal function to common disorders and diseases. Students will investigate the physiology of disease through dissections, laboratory studies, case studies and research. Students will learn about the developmental stages of a human from prenatal development until death, and explore how health evolves over time. Students will research and describe the most common acute and chronic diseases prevalent in the local community and develop action plans for prevention in the community.

**Unit Four: Infectious Disease:** In this unit, students will investigate the role of pathogens in disease and in the healthcare setting. After conducting laboratory studies, students will be able to explain how pathogens infect the body. They will test every-day items, their hands and face for the presence of microbes and culture their microbes in different antibiotics to see how antibiotics are used. Students will discover the importance of vaccines to protect themselves and the patients they serve by completing a simulated lab and case studies. They will complete a case study on the evolution of antibiotic-resistant bacteria to understand the problems related to overuse of them. They will recommend a set of procedures to reduce the chance of infection and practice sterile techniques and hand-washing techniques. They will determine which precautionary guidelines would be indicated for different infectious diseases by studying the different modes of transmission.

**Unit Five - The Patient's Story:** In this unit, students will be introduced to the different parts of the medical record and learn how to document in an electronic health record. Students will start with an in depth study of patient privacy laws, and will be able to maintain written guidelines of the Health Insurance Portability and Accountability Act (HIPAA) in all communications. Students will learn how to obtain a history from a patient and how to complete a review of systems. They will learn how past medical, family and social history can be good, but not perfect, indicators of health. They will research factors that define cultural differences between and among different ethnic, racial, and cultural groups and special populations, and the affect these will have on health. They will investigate the different barriers to communicate and discuss the need for qualified medical interpreters. At the end of this unit, students will be able to effectively create a complete medical record from simulated patient visits.

**Unit Six - Diagnosis:** In this unit, students will practice physical exam skills. They will conduct a basic visual exam, will listen to heart, lung and bowel sounds and will simulate other aspects of the physical exam. They will interpret ECGs results and relate this to the physiology of the heart. They will complete laboratory testing on simulated blood samples, urine samples, etc. They will collect and synthesize data about the patient's symptoms, vital signs, history, physical exam findings, and laboratory studies and document them in an electronic health record. Using their knowledge of pathophysiology, infectious disease, patient history and the physical exam findings, they will then propose a list of differential diagnoses based on this data, and research a proposed course of action. They will detail how the patient will be treated by a team, so that each team member is working within their scope of practice.

**Unit Seven - Treatment:** In this unit, students will gain hands-on experience in patient care. Students will perform venipuncture simulations. Students will learn CPR, First Aid and AED, and receive certification. They will learn how to repair lacerations using sutures and staples. They will practice surgical techniques and review sterile protocol. Students will calculate dosages for patients, and will study interactions of different medicines. Students will demonstrate the principles of body mechanics as they apply to the positioning, transferring, and transporting of patients. Students will determine appropriate equipment for transportation and transfer, including the modification of equipment and techniques to accommodate the health status of the patient.

**For Lab Sciences Only**  
**LABORATORY ACTIVITIES:**

**Handwashing Lab** - In this lab students will explore different types of handwashing and the effect they have on the microbial flora of the hands. Prior to the lab, students will predict the most effective handwashing techniques and decide what to test. For example, students will wash their hands with water, with soap and warm water, with betadine, using scrubbers, etc. Each time, students will place a thumbprint on an agar plate and culture to see the amount of growth after 24 hours. Students will then analyze their results to see any statistical differences in growth between the different techniques and propose a hand-washing protocol to be used prior to surgery.

**Urinalysis Lab** - In this lab, students will perform a urinalysis on an artificial sample of urine. Students will first review the urinary system and investigate the different components of human urine. They will learn the normal range for urine pH, color, specific gravity, chemicals, and other substances. They will test their urine sample for protein, glucose, pH, Ketones, specific gravity and the presence of bacteria. They will then use the data collected to suggest differential diagnoses for their patient.

**Suture Lab** - Students will first review the structure and function of the integumentary system and immune systems. Students will investigate the risks and benefits of closing a wound and discuss ways to prepare the laceration to reduce the risk of infection. Students will repair the laceration to achieve good wound approximation for a variety of different laceration types all while following sterile procedure. In their laboratory report students will discuss the wound care procedures they recommend to their patient.

**KEY ASSIGNMENTS:**

**Unit One:** Students will create a poster for a health care occupation of their choice. Students will research the career and interview a person working within that field to get a thorough understanding of the career. Students will then write a paper that details the scope of practice, the various roles and responsibilities, the required educational preparation, the certification process and the salary range and present their poster to the class. These posters will be displayed prominently in the class and referred to as we explore the science of patient care.

**Unit Two:** Students will read excerpts of “The Healing of America,” and watch portions of the documentary films “Sicko” and “Escape Fire” as well as reviewing supplemental assigned readings. Students will then participate in a Socratic seminar on the American Health Care System. Students will determine if they feel the American system is a good system and discuss aspects of foreign healthcare systems we might borrow. Students will finally prepare national health care plans and participate in classroom debates to try to convince their classmates that their system is the best.

**Unit Three:** *Research Project* - Students will research and describe a common acute or chronic disease prevalent in their community and develop an action plan for prevention. Students will explore the disease, including relevant risk factors, the physiology of how the disease affects the body, the symptoms that would occur, and the treatment. Students will write a 3-4 page research paper with properly cited sources, and prepare a 4-6 minute presentation for the class.

**Unit Four:** *Handwashing Lab* - In this lab students will explore different types of handwashing and the effect they have on the microbial flora of the hands. Prior to the lab, students will predict the most effective handwashing techniques and decide what to test. For example, students will wash their hands with water, with soap and warm water, with betadine, using scrubbers, etc. Each time, students will place a thumbprint on an agar plate and culture to see the amount of growth after 24 hours. Students will then analyze their results to see any statistical differences in growth between the different techniques and propose a hand-washing protocol to be used prior to surgery.

**Unit Five:** *Medical History Research Paper* - Students will write a 3-4 page research paper with properly cited sources about the effect of social, lifestyle, cultural, and family history on their health. Students will then detail how they can make choices to mitigate those effects. For example a student exposed to secondhand smoke with a family history of hypertension is at a greater risk of developing heart disease. This student might choose to exercise regularly, eat a heart-healthy diet and never smoke to mitigate these health determinants.

**Unit Six:** *Urinalysis Lab* - In this lab, students will perform a urinalysis on an artificial sample of urine. Students will first review the urinary system and investigate the different components of human urine. They will learn the normal range for urine pH, color, specific gravity, chemicals, and other substances. They will test their urine sample for protein, glucose, pH, Ketones, specific gravity and the presence of bacteria. They will then use the data collected to suggest differential diagnoses for their patient.

**Unit Seven:** *Suture Lab* - Students will first review the structure and function of the integumentary system and immune systems. Students will investigate the risks and benefits of closing a wound and discuss ways to prepare the laceration to reduce the risk of infection. Students will repair the laceration to achieve good wound approximation for a variety of different laceration types all while following sterile procedure. In their laboratory report students will discuss the wound care procedures they recommend to their patient.

#### **INSTRUCTIONS METHODS and/or STRATEGIES:**

- Project Based Learning
- Guided Inquiry projects
- Modeling
- Direct instruction (minimal)
- Google Classroom
- MBTA Computer Day
- Soft Skills modeling
- Monthly Guest Speakers
- HOSA Lesson Plans
- Career Day Field Trip
- District Student CTE Showcase

#### **ASSESSMENTS INCLUDING METHODS and/or TOOLS**

- Project-based learning (Graded by rubric)
  - Cumulative unit presentations
  - Medical Innovations for real life medical phenomenon
- Unit exams
- End of Course Exam
- Final Project Prezi, Wikiproject or YouTube short film
- Digital Portfolio

## INSTRUCTIONAL MATERIALS:

### *Textbook*

Introduction to Health Science, Pathway to Your Future, Dorothy Winger

### *Other Resources*

<b>Title</b>	<b>Author</b>	<b>Publisher</b>	<b>Edition</b>	<b>Website</b>	<b>Primary</b>
Human Anatomy and Physiology (or other District Anatomy & Physiology text)	Elaine N. Marieb and Katia N. Joshn	Pearson	10th edition 2015	[ empty ]	No
Transcultural Health Care	Larry D. Purcell and Betty J. Paulanka	F. A. Davis Company	3rd edition	[ empty ]	No
100 Case Studies in Pathophysiology	Harold J. Bruvere Jr., PhD	Lippincott Williams & Wilkins	1st	[ empty ]	No
Heartsaver: First Aid with CPR and AED	American Heart Association	American Heart Association	Any recent year	[ empty ]	No
Basic Epideminology	R. Bonita, R. Beagelhole & T. Kielstrom	WHO	Any recent year	[ empty ]	No

### *Literary Texts*

<b>Title</b>	<b>Author</b>	<b>Publisher</b>	<b>Edition</b>	<b>Website</b>	<b>Read in entirety</b>
The Healing of America	T.R. Reid	Penguin Books	Any	[ empty ]	No
How Doctors Think	Jerome Groopman	Houghton Mifflin Harcourt	Any	[ empty ]	Yes

### *Multimedia Resources*

<b>Title</b>	<b>Authors</b>	<b>Director</b>	<b>Name of video series</b>	<b>Date</b>	<b>Website</b>	<b>Medium of Publication</b>
Sicko	[ empty ]	Michael	Liongate Dog	2007	(available at	documentary

<b>Title</b>	<b>Authors</b>	<b>Director</b>	<b>Name of video series</b>	<b>Date</b>	<b>Website</b>	<b>Medium of Publication</b>
	]	Moore	Eat Dog Productions		<a href="http://freedocumentaries.org">freedocumentaries.org</a>	film
Escape Fire: The Fight to Rescue American HealthCare	[ empty ]	Michael Heineman, Susan Froemke	Roadside Attractions	2012	[ empty ]	documentary film

***Other Materials***

American Association of Medical Assistant Monthly Newsletter  
 Journal of American Medical Assistants (JAMA)  
 Google Classroom  
 Prezi Presentation Software  
 Various Medical Equipment

**For CTE Pathway:**

**Sequence of Courses:**

Biology  
 Introduction to Human Anatomy and Physiology  
 Medical Science and Terminology  
 Healthcare Essentials

**Committee Members:**

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| <b>1. David Pintado, CTE Teacher</b>               | <b>4. Jillian Maganito, MBTA Science Teacher</b>                                   |
| <b>2. Shawn Mietz, MBTA Lead Teacher</b>           | <b>5. Liane Cismowski, MDHS Principal</b>  |
| <b>3. Sandy Johnson Shaw, MBTA Science Teacher</b> | <b>6. Heather Fontanilla, Administrator, Career Pathways &amp; Linked Learning</b> |