

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

COURSE TITLE: Health Science I
COURSE NUMBER: 032550
CBEDS NUMBER: 7920
DEPARTMENT: Health Science Academy
LENGTH OF COURSE: 1 year
CREDITS PER SEMESTER: 5 credits
GRADE LEVEL(S): 10th grade
REQUIRED OR ELECTIVE: Elective/required for Health Academy Students

PREREQUISITES: Student in health pathway
Required -
Recommended -

BOARD OF EDUCATION ADOPTION:

COURSE DESCRIPTION: The course is designed for students in a health care pathway. It is a two year course designed to explore health care careers and provide an introduction to Medical Terminology. Students will explore careers in the healthcare field, learn about issues within health care including safety, culture, ethics and legal responsibilities. The course will also provide foundational skills, such as medical math. They will also begin to learn the basics for medical terminology through studying different body systems.

COURSE PURPOSE: This course provides students with the opportunity to explore health related issues and health professions from certification programs to post-graduate studies. The course provides information needed for students to understand health care career choices, including educational requirements, job descriptions, wages, benefits, and employment outlook. The course will also focus on building effective 21st century skills needed within the industry. Students will produce health related projects designed to educate the general public about a variety of topics with the health science. Students will provide an introduction to basic medical terminology in the diagnosis and treatment of diseases and disorders of the different body systems.

This course is for sophomores with integrated CTE standards as related to the Health Science and Medical Technology pathway. Content is aligned to the common core standards through the anchor standards for this specific pathway. The course is an articulated course with Diablo Valley Community College (DVC) where students have the opportunity to earn 3 college credits at the end of the year. This is the first year of a two year Medical Terminology course.

COURSE OUTLINE:

Unit 1- Introduction to Medicine and Career Planning

This unit will serve as an introduction to medicine and health care career planning. The unit will start with information on the possible careers in the health care field. Students will gain knowledge of what is available in the field and explore future career possibilities. Using the *Health Career Explorations* textbook, students will research 15 different career clusters in the health care career field, exploring different job descriptions, educational requirements, salary ranges and additional up-to-date information. Students will also be introduced

to the *Health Occupation Student Association (HOSA)*, the Career Technical Student Organization for health care pathways. Students will be provided the opportunity to participate in meetings, volunteer opportunities, and HOSA sponsored competitions.

Unit 2 -- Health Care: Past, Present and Future

In this unit students explore the significant people and milestones of those who made an impact on modern medicine. Students will also learn about current issues, including HIPAA, insurance reimbursement and the impact of technology on current health care careers. Finally, students will research technological advances in medicine and how those advances are impacting patient care. At the end of this unit, students will be able to list significant people, regions and occurrences as well as their importance to health care of the past & present; identify socioeconomic factors that influence the health care industry; identify milestones in the advancement of health care; describe factors that have contributed to the rising cost of health care; describe methods being used to reduce health care costs; and describe different types of health care services.

Unit 3- Safety and Patient Care

In this unit students learn about the infectious disease process and the chain of infection. Isolation precautions will be introduced and practiced in terms of hand washing, gowning & gloving, the use of protective eyewear and the different types of masks used in healthcare. Principles of asepsis are introduced and students will observe dental instructors sterilizing and identifying surgical equipment. Students will learn about the role of OSHA and OBRA in managing issues of employee competence testing, skill performance & safety in the workplace. Students will practice safe body mechanics and ergonomics & learn how to properly use gait belts, patient positioning, proper use of fire extinguishers (including R.A.C.E. & P.A.S.S.), and how to dispose of infectious & hazardous waste.

Unit 4- Culture; Ethical and Legal Responsibilities

In this unit, students will gain greater understanding of the different cultures, ethnic customs and traditions they might encounter in providing health care in the United States. Each student will be able to identify how cultural differences may affect patient care and how to identify when a potential cultural barrier might exist. Students will learn about what actions might overcome those cultural obstacles.

Students will learn the ethical and legal responsibilities of the healthcare field. They will learn about patient's rights, the advance directive for healthcare and the professional standards. The topics of medical law, ethics, and confidentiality are addressed through this unit as well.

Unit 5- Vital Signs and Medical Math

In this unit students will begin to explore how to assess a patient's health status. They will learn how to take a full set of vital signs, including all related terminology and all normal and abnormal values. These skills involve: blood pressure (manual & automatic), temperature (oral, axillary & temporal using glass, digital & temporal thermometers), heart rate (from several different anatomical locations), respiratory rate, and pain scale analysis. Students will learn how to measure height, weight, BMI and body fat (with a digital scale & calipers). Students will be introduced to medical math, including conversions, military time & graphing.

Unit 6- Introduction to Medical Terminology by Body System

In this unit students will review the content learned in their Health Science 1 course regarding body organization and terminology. Students will review word roots, suffixes & prefixes. They will determine meanings on the basis of word parts and learn how to use a medical dictionary.

Unit 7- Musculoskeletal System

In this unit students will learn applicable medical terminology, structure, function, diseases & disorders associated with the skeletal system and the muscular system. Medical specialties related to the skeletal and muscular systems. Finally, students will learn about the diagnostic & treatment procedures of the skeletal system and the muscular system.

Unit 8- Cardiovascular System

In this unit students will learn the applicable medical terminology in the study of the cardiovascular system. They will learn the structure and function of the system as well as the diseases & disorders associated with the cardiovascular system. Students will be introduced to medical specialties related to the cardiovascular system. Students will learn about the diagnostic & treatment procedures of the cardiovascular system.

Unit 9- Respiratory System

In this unit students will learn the applicable medical terminology, structure, function, diseases & disorders associated with the respiratory system. They will learn about the medical specialties related to the respiratory system will also be introduced & researched. Students will learn the diagnostic & treatment procedures of the respiratory system.

KEY ASSIGNMENTS:

Unit 1: To gain a broader perspective of what medicine is and what health care careers are available, the students will read about the different health careers available, including those not typically considered within health care. Guest speakers will visit the class so students can hear about different career options. Students will go on a field trip to a local hospital to see the breadth of career options available within a hospital setting. After doing this research, students will choose a career option that interests them and will research that career. They will research the path students need to take to enter that career field. They will create a Power Point presentation about that career and present it to the rest of the class.

Unit 2: To gain a broader perspective of how medicine has evolved and how that has impacted health care careers, students will:

1. Research the past and present of healthcare and explore predictions regarding the future of health care.
2. Research historical figures in medicine. Prepare a presentation on that person.
3. Research new technological advances in health care. Choose one advance and write a short essay about the technological advance and how it will impact health care. The essay will also discuss how this advance will impact different health care careers.

Unit 3: Students will research proper hand washing, infectious diseases, and safety disposal practices.

1. Students will practice in the skills lab the following: donning & duffing PPE, proper hand-washing, & safe use of a gait belt with partners using proper body mechanics (must properly attach gait belt, move a patient from lying down to sitting to standing, ambulate across the room, then again sit the patient back down, remove gait belt, then reposition "patient" back down in a supine position).
2. Students will research different infectious diseases and how safe practices can help limit the spread of infection. Students will write a description of the methods of Standard & Transmission-Based Isolation Precautions that prevent the spread of microorganisms
3. Students will create a poster highlighting different safety precautions to stop the spread of disease. Students will present their poster to industry partners.

4. Students will define at least 10 terms relating to safety practices in health care.
5. Students will describe three levels of medical asepsis and at least three principles of surgical asepsis.
6. Students will research OBRA & OSHA and write an essay discussing the role of these regulations and how it impacts health care careers. the functions of OBRA & OSHA
7. Students will create a brochure that describes the signs & symptoms of general & localized infection.

Unit 4:

1. Students will research different cultural norms regarding health care. Students will choose a culture and create a brochure about the cultural norms.
2. Students will choose a controversial topic and write a short research paper, prepare a brochure, and present findings to their peers in terms of their topic & how it relates to medical ethics, legality and the possible confidentiality issues each might present in terms of HIPAA & medical law.
3. Students will be able to describe terms relating to legal & ethical principles.
4. Students will analyze examples of ethical behavior for the health care worker and be able to identify situations of improper ethical or legal behavior.
5. Students will explain the importance of confidentiality in health care, including privacy issues resulting from advanced technology.
6. Students will research the rights of patients and describe the role of the health care worker regarding current legal issues, including advance directives & telemedicine.

Unit 5:

1. Students will describe and demonstrate the elements of a basic health assessment, identify normal & abnormal vital signs.
2. Students will write a description of physiologic processes & explain importance of the values for normal vital signs.
3. Students will perform basic mathematical skills related to healthcare, including conversions, calculations of Mean Arterial Pressure for hypotension, charting with a 24-hour clock, and the graphing of vital signs.
4. Students will demonstrate the use of proper terminology for all normal & abnormal values of blood pressure

Unit 6:

1. Students will identify the roles of the four types or word parts used in forming medical terms and use their knowledge of word parts to analyze unfamiliar medical terms.
2. Students will describe the steps in locating a term in a medical dictionary or online resource and define the commonly used word roots, combining forms, suffixes, and prefixes introduced in this unit. Students will create flash cards for prefixes, suffixes and word roots.
3. Students will use the "sounds-like" pronunciation system & audio files to correctly pronounce the primary terms introduced in this unit.
4. Students will recognize the importance of spelling medical terms correctly and state why caution is important when using abbreviations. Students will define, spell, & correctly pronounce the primary terms introduced in this unit.
5. Students will create a "rap" or song (poem) using medical terms learned and the formation of those words.

Unit 7:

1. Students will research and describe the major functions & structures of the skeletal system. They will also describe three types of joints. They will describe how to differentiate between the axial & appendicular skeletons.

2. Students will research the different medical specialties who treat disorders of the skeletal system and the muscular system. They will prepare a presentation to their classmates about one of the medical specialties in which they describe the specialty and describe the path to get to that specialty.
3. Students will identify, define, spell, & pronounce the primary terms related to the pathology & the diagnostic & treatment procedures of the skeletal system. Students will create flash cards.
4. Students will research the functions & structures of the muscular system, including muscle fibers, fascia, tendons, & the three types of muscle.
5. Students will identify, define, pronounce, & spell the primary terms related to muscle movements, & explain how the muscles are named. Students will create flash cards.
6. Students will recognize, define, pronounce, & spell the primary terms related to the pathology & the diagnostic & treatment procedures of the muscular system. Students will create flash cards.
7. Students will demonstrate the use of equipment used in the diagnosis and treatment of muscular system including walkers, wheelchairs, crutches, ultrasound, TENS Units, massage, heat, & ice.
8. Students will create an apron that has either the muscular system or the skeletal system.

Unit 8:

1. Students will create a diagram of the heart showing the different chambers, valves, blood flow, heartbeat, and blood supply.
2. Students will describe the function of the different types of blood vessels and describe how to differentiate the three different types of blood vessels.
3. Students will research and write a short essay describing the major components of blood and the function of each component.
4. Students will describe the difference between pulmonary & systemic circulation.
5. Students will identify, define, spell, & pronounce the primary terms related to the pathology & the diagnostic & treatment procedures of the cardiovascular system. Students will create flash cards.
6. Students will research the different careers involved in the cardiovascular system and explain the differences between Cardiologist, Cardiovascular Surgeon, PA, Perfusionist, EKG Technician & Pacemaker Representative.
7. Students will create a poster showing the cardiovascular system.

Unit 9:

1. Students will research and describe the major functions of the respiratory system. Students will also describe the structures of the respiratory system.
2. Students will identify, define, spell, & pronounce the primary terms related to the pathology & the diagnostic & treatment procedures of the respiratory system. Students will create flash cards.
3. Students will research the careers are involved in the treatment of the respiratory system; including pulmonology & respiratory therapy.
4. Students will research and explain the connection between environmental factors, including smoking, and respiratory disease. Students will write a research paper regarding smoking and respiratory disease.

INSTRUCTIONS METHODS and/or STRATEGIES:

1. Project based learning
2. Guided inquiry projects- through guest speakers and hospital field trip
3. Direct instruction
4. Research
5. Simulations

ASSESSMENTS INCLUDING METHODS and/or TOOLS

1. Project based learning, graded by rubric
2. Cumulative unit presentations
3. Unit exam
4. Presentations
5. Written work such as essays and brochures

INSTRUCTIONAL MATERIALS:

Title: Health Career Explorations

Publication Date: 2004

Publisher: Delmar, Cengage Learning

Author(s): Louise Simmons

Title: Medical Terminology

Publication Date: 2017

Publisher: F.A. Davis Company

Author(s): Barbara A. Gylys and Mary Ellen Wedding

Supplemental Instructional Materials:

Guest Speakers:

Specialized doctor

Specialized nurse

Health care administration

Ortho surgeon/nurse

Cardio surgeon/nurse

Respiratory Therapist

Pulmonologist

Field Trip(s):

Field trip to John Muir or Kaiser Hospital

Garfield Innovation Center

Videos/Movies:

Outbreak, 1995

Medical, legal and ethical issues-<https://www.youtube.com/watch?v=u6GDaKsVn9s>

Dosage Calculations- Medical Math...Everything you need to know!

<https://www.youtube.com/watch?v=liP21-ZnPEg>

Greys Anatomy, TV show

Medical Terminology Introduction

A Day in the Life of an Ortho Surgeon- <https://www.youtube.com/watch?v=YfiLiIEJZ6Y>

How to use a TENS unit- <https://www.youtube.com/watch?v=Wo8igqC6-oY>

EKG- <https://www.youtube.com/watch?v=FThXJUFWUrw>

Pacemaker- <https://www.youtube.com/watch?v=z14sRusaaco>

COPD- <https://www.youtube.com/watch?v=T1G9Rl65M-Q>

Lung Cancer- <https://www.youtube.com/watch?v=I7tlPOEkjnw>

PowerPoint:

History of Healthcare

History of Medicine

What the future holds- Technological advancements in healthcare

Safety Practices

HIPPA laws

Medical Math

Foundational skills

Medical Terminology through body systems

Using Medical Abbreviations

Interpreting word parts

Musculoskeletal System

Cardiovascular System

Respiratory System

Websites:

Historical Healthcare figures: https://padlet.com/anolan2/HCHistory_2B

Influential People in Medicine: <https://www.medicaldaily.com/people-medicine-influence-history-374620>

U.S. Department of Health and Human Services- HIPPA laws

Hypertension- CDC- <https://www.cdc.gov/bloodpressure/index.htm>

Heart Disease- Mayo Clinic-<https://www.mayoclinic.org/diseases-conditions/heart-disease/symptoms-causes/syc-20353118>

Cancer- National Cancer Institute- <https://www.cancer.gov/>

Lung Disease- American Lung Association- <https://www.lung.org/>

American Cancer Society- <https://www.lung.org/>

CTE/Career Resources:

Job search- www.jobs.ca.gov

Health Careers- <https://explorehealthcareers.org/health-career-resources/health-career-exploration/>