

Healthcare Science

PROGRAM CONCENTRATION: Healthcare Science

COURSE TITLE: Middle School Healthcare Science, 6th Grade

COURSE DESCRIPTION:

This course provides students with an exploratory introduction to several healthcare careers and the safety procedures and interpersonal communication skills required for them. The course will enable students to receive initial exposure to healthcare science skills; attitudes applicable to healthcare including the concepts of health, wellness, and preventative care; and responsibilities of today's healthcare provider. Mastery of skills through project based learning, technical skills practice, and group activities will provide students with an opportunity to decide if they want to continue this course of study in high school and/or at a post-secondary institution. This course is considered broad-based with high impact.

SAFETY PRACTICES AND INFECTION CONTROL:

MSHS6-HS-1: Students will demonstrate the proper implementation of safe work practices to prevent injury or illness.

- a) Demonstrate the proper method for hand washing.
- b) List the correct sequence of body motions for lifting, pushing, and turning.
- c) Discuss the causes, prevention, and effects of HIV/AIDS and hepatitis.

ACADEMIC STANDARDS:

S6CS2 – Students will use standard safety practices for all classroom laboratory and field investigations.

S6CS4 – Students will use tools and instruments for observing, measuring, and manipulating equipment and materials in scientific activities.

S6CS7 – Students will question scientific claims and arguments effectively.

M6A2 – Students will consider relationships between varying quantities.

M6D1 – Students will pose questions, collect data, represent and analyze the data, and interpret results.

HEALTHCARE COMMUNICATIONS:

MSHS6-HS-2: Students will effectively communicate orally and in writing, applying knowledge of healthcare science communications.

- a) Differentiate between verbal and non-verbal communication and evaluate the components and barriers to effective communication.
- b) Interpret basic medical abbreviations selected from JCAHO's recommended abbreviations list.
- c) Analyze and define medical terms utilizing common medical prefixes, suffixes, and word roots.

ACADEMIC STANDARDS:

S6CS1 – Students will explore the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works.

S6CS3 – Students will use computation and estimation skills necessary for analyzing data and following scientific explanations.

S6CS6 – Students will communicate scientific ideas and activities clearly.

M6A2 – Students will consider relationships between varying quantities.

M6P3 – Students will communicate mathematically.

INTRODUCTION TO CENTRAL SUPPLY:

MSHS6-HS-3: Students will explore the different careers available in the field of central supply.

- a) Compare and contrast the roles and responsibilities of central supply coordinators, central supply technicians, and central supply assistants, along with their education, training requirements, salary ranges, jobs outlooks, and facilities in which they work.
- b) Identify the areas of the central supply/processing department.
- c) Describe the proper flow of instruments and equipment in the central supply department.
- d) Evaluate potential causes and methods of transmitting infection.
- e) Compare and contrast medical asepsis and surgical asepsis.
- f) Describe the process for handling and storage of sterile and non-sterile items.
- g) Explain the purchasing process in order to maintain adequate quantities of supplies, equipment, instruments, and medical devices.
- h) Demonstrate at least one of the following:

- Identification, cleaning, and proper storage of surgical instruments.
- Packaging, sterilization, and storage of medical supplies.
- The mock purchasing process using catalogs, price lists, inventory records, and purchase orders.

ACADEMIC STANDARDS:

S6CS3 – Students will use computation and estimation skills necessary for analyzing data and following scientific explanations.

M6N1 – Students will understand the meaning of the four arithmetic operations as related to positive rational numbers and will use these concepts to solve problems.

M6P5 – Students will represent mathematics in multiple ways.

INTRODUCTION TO RADIOLOGY:

MSHS6-HS-4: Students will explore the different careers available in the field of radiology.

- a) Compare and contrast the roles and responsibilities of radiologists, sonographers and other advanced practice certified radiology healthcare workers, and radiation technologists, along with their education, training requirements, salary ranges, jobs outlooks, and facilities in which they work.
- b) Describe the effects of radiation overexposure and how the healthcare worker protects the patient and him/herself from these effects.
- c) Distinguish between hard and soft tissue on a radiograph.
- d) Define the terms MRI, CAT scan (CT scan) and ultrasound, and describe when these imaging techniques are used.
- e) Describe why a contrast agent might be used.
- f) Demonstrate at least one of the following:
 - Proper placement of a lead apron when exposing a patient to radiation.
 - Proper positioning of a mock patient and mock X-ray tube when taking a radiograph of a specific anatomical structure on the mock patient.
 - Putting a mock patient at ease if a contrast agent were to be delivered.

ACADEMIC STANDARDS:

S6CS3 – Students will use computation and estimation skills necessary for analyzing data and following scientific explanations.

S6CS7 – Students will question scientific claims and arguments effectively.

M6D1 – Students will pose questions, collect data, represent and analyze the data, and interpret results.

M6P4 – Students will make connections among mathematical ideas and to other disciplines.

INTRODUCTION TO REHABILITATION SERVICES

MSHS6-HS-5: Students will explore the different careers available in the field of rehabilitation services.

- a) Compare and contrast the roles and responsibilities of physical therapists, occupational therapists, and speech-language pathologists, along with their education, training requirements, salary ranges, jobs outlooks, and facilities in which they work.
- b) Describe speech and language problems that require the intervention of a speech-language pathologist and modalities that may be used during treatment.
- c) Identify the structures of the mouth and throat involved in chewing, swallowing, and speaking.
- d) Investigate alternative methods of communication.
- e) Demonstrate at least two of the following:
 - The teaching of activities of daily living to a mock patient.
 - The use of adaptive equipment (e.g., splints, modifications of commonly used items)
 - Range-of-motion testing of upper and lower extremities.
 - Use of a gait belt to assist with ambulation.
 - Proper use of crutches, canes, or walkers.
 - Sign language.

ACADEMIC STANDARDS:

M6M2 – Students will use appropriate units of measure for finding length, perimeter, area and volume and will express each quantity using the appropriate unity.

M6P4 – Students will make connections among mathematical ideas and to other disciplines.

S6CS4 – Students will use tools and instruments for observing, measuring, and manipulating equipment and materials in scientific activities.

S6CS3 – Students will use computation and estimation skills necessary for analyzing data and following scientific explanations.

INTRODUCTION TO DENTISTRY

MSHS6-HS-6: Students will explore the different careers available in the field of dentistry.

- a. Compare and contrast the roles and responsibilities of dentists, dental hygienists, dental assistants, and dental technicians, along with their education, training requirements, salary ranges, job outlooks, and facilities in which they work.
- b. Identify the crown, root, apex, enamel, dentin, and pulp chamber of a tooth.
- c. Define the term *caries* and describe its etiology and preventive measures.
- d. Compare and contrast gingivitis and periodontitis.
- e. Recognize the effects of alcohol and tobacco use on the oral tissues.
- f. Distinguish between a bitewing, periapical, and panoramic radiograph.
- g. Demonstrate at least one of the following:
 - Proper seating of a dental patient.
 - Proper oral hygiene instructions.
 - Proper registration of a mandibular alginate impression (i.e., taking an impression of the lower teeth), on typodont (dental head simulator) or self.
 - Proper method of passing instruments between dentist and dental assistant.

ACADEMIC STANDARDS:

S6CS3 – Students will use computation and estimation skills necessary for analyzing data and following scientific explanations.

M6D1 – Students will pose questions, collect data, represent and analyze the data, and interpret results.

M6P4 – Students will make connections among mathematical ideas and to other disciplines.

INTRODUCTION TO PHARMACY

MSHS6-HS-7: Students will explore the different careers available in the field of pharmacy.

- a. Compare and contrast the roles and responsibilities of pharmacists, pharmacy aides, and pharmacy technicians, along with their education, training requirements, salary ranges, job outlooks, and facilities in which they work.
- b. Maintain pharmacy inventory and inform the supervisor of stock needs.
- c. Fill written prescriptions or requests for prescription refills with simulated medications.
- d. Verify the accuracy and completeness of prescription information.
- e. Retrieve, count, pour, weigh, measure, and mix simulated medications.
- f. Prepare prescription labels.
- g. Select the appropriate container for a medication.
- h. Affix the prescription and auxiliary labels to a medication container.
- i. List routes of medication administration and their appropriate uses.

- j. Demonstrate at least one of the following:
- Creation of a client profile for a pharmacy database.
 - Use of the Physicians' Desk Reference (PDR) or other drug references.
 - Writing of a prescription using JCAHO-accepted abbreviations and symbols.
 - Placement of a filled prescription in the appropriate bin for patient pick-up.

ACADEMIC STANDARDS:

M6M1 – Students will convert from one unit to another within one system of measurement (customary or metric) by using proportional relationships.

M6A2 – Students will consider relationships between varying quantities.

S6CS3 – Students will use computation and estimation skills necessary for analyzing data and following scientific explanations.

S6CS4 – Students will use tools and instruments for observing, measuring, and manipulating equipment and materials in scientific activities.

READING STANDARD COMMENT:

After the elementary years, students are seriously engaged in reading for learning. This process sweeps across all disciplinary domains, extending even to the area of personal learning. Students encounter a variety of informational as well as fictional texts, and they experience text in all genres and modes of discourse. In the study of various disciplines of learning (language arts, mathematics, science, social studies), students must learn through reading the communities of discourse of each of those disciplines. Each subject has its own specific vocabulary, and for students to excel in all subjects, they must learn the specific vocabulary of those subject areas *in context*.

Beginning with the middle grade years, students begin to self-select reading materials based on personal interests established through classroom learning. Students become curious about science, mathematics, history, and literature as they form contexts for those subjects related to their personal and classroom experiences. As students explore academic areas through reading, they develop favorite subjects and become confident in their verbal discourse about those subjects.

Reading across curriculum content develops both academic and personal interests in students. As students read, they develop both content and contextual vocabulary. They also build good habits for reading, researching, and learning. The Reading Across the Curriculum standard focuses on the academic and personal skills students acquire as they read in all areas of learning.

CTAEMRC-1: Students will enhance reading in all curriculum areas by:

- a. Reading in all curriculum areas.
 - Read a minimum of 25 grade-level appropriate books per year from a variety of subject disciplines and participate in discussions related to curricular learning in all areas.
 - Read both informational and fictional texts in a variety of genres and modes of discourse.
 - Read technical texts related to various subject areas.
- b. Discussing books.
 - Discuss messages and themes from books in all subject areas.
 - Respond to a variety of texts in multiple modes of discourse.
 - Relate messages and themes from one subject area to messages and themes in another area.
 - Evaluate the merit of texts in every subject discipline.
 - Examine author's purpose in writing.
 - Recognize the features of disciplinary texts.
- c. Building vocabulary knowledge.
 - Demonstrate an understanding of contextual vocabulary in various subjects.
 - Use content vocabulary in writing and speaking.
 - Explore understanding of new words found in subject area texts.
- d. Establishing context.
 - Explore life experiences related to subject area content.
 - Discuss in both writing and speaking how certain words are subject area related.
 - Determine strategies for finding content and contextual meaning for unknown words.

WRITING:

The student writes clear, coherent text. The writing shows consideration of the audience and purpose. The student progresses through the stages of the writing process (e.g., prewriting, drafting, revising, and editing successive versions).

CTAEW-1: The student demonstrates competence in a variety of genres.

The student produces technical writing (business correspondence: memoranda, emails, letters of inquiry, letters of complaint, instructions and procedures, lab reports, slide presentations) that:

- a) Creates or follows an organizing structure appropriate to purpose, audience, and context.
- b) Excludes extraneous and inappropriate information.
- c) Follows an organizational pattern appropriate to the type of composition.
- d) Applies rules of Standard English.

CTAEW-2: The student uses research and technology to support writing.

The student:

- a) Identifies topics, asks and evaluates questions, and develops ideas leading to inquiry, investigation, and research.
- b) Uses organizational features of electronic text (e.g., bulletin boards, databases, keyword searches, e-mail addresses) to locate relevant information.
- c) Includes researched information in different types of products (e.g., compositions, multimedia presentations, graphic organizers, projects, etc.).
- d) Uses appropriate structures to ensure coherence (e.g., transition elements).
- e) Supports statements and claims with anecdotes, descriptions, facts and statistics, and specific examples.
- f) Gives credit for both quoted and paraphrased information in a bibliography by using a consistent and sanctioned format and methodology for citations.

CTAEW-3: The student consistently uses the writing process to develop, revise, and evaluate writing.

The student:

- a) Plans and drafts independently and resourcefully.
- b) Uses strategies of note taking, outlining, and summarizing to impose structure on composition drafts.
- c) Edits writing to improve word choice after checking the precision of the vocabulary.

ENTREPRENEURSHIP:

MKT-EN-1: Understands concepts and processes associated with successful entrepreneurial performance.

- a) Define entrepreneurship.
- b) Identify and analyze characteristics of a successful entrepreneur.
- c) Identify the reasons for planning in entrepreneurial businesses.
- d) Discuss the entrepreneurial discovery processes.
- e) Assess global trends and opportunities.
- f) Determine opportunities for business creation.
- g) Generate ideas for business.
- h) Determine feasibility of ideas.
- i) Determine the major reasons for business failure.

ACADEMIC STANDARDS:

ELA8W1 – The student produces writing that establishes an appropriate organizational structure, sets a context and engages the reader, maintains a coherent focus throughout, and signals a satisfying closure.

ELA8W3 – The student uses research and technology to support writing.

SSEF6 – The student will explain how productivity, economic growth and future standards of living are influenced by investment in factories, machinery, new technology and the health, education and training of people.

SSEIN1 – The student will explain why individuals, businesses and governments trade goods and services.

MKT-EN-2: Explain the fundamental concepts of business ownership.

- a) Determine the relationship of competition to our private, free enterprise system.
- b) Explain the effects of competition on buyers and sellers.
- c) Identify the common types of business ownership.
- d) Compare and contrast the advantages and disadvantages of each type of ownership.
- e) Explain relevant government regulations relating to the operation of a business.
- f) Discuss the types of risks that businesses encounter.
- g) Explain how businesses deal with the various types of risks.
- h) Identify the market segment for the business.
- i) Formulate a marketing mix designed to reach a specific market segment.
- j) Utilize the marketing functions to determine the competitive advantage of the proposed business.

ACADEMIC STANDARDS:

ELA8W1 – The student produces writing that establishes an appropriate organizational structure, sets a context and engages the reader, maintains a coherent focus throughout, and signals a satisfying closure.

ELA8W3 – The student uses research and technology to support writing.

SSEF5 – The student will describe the roles of government in a market economy.

CTAE FOUNDATION SKILLS:

The Foundation Skills for Career, Technical and Agricultural Education (CTAE) are critical competencies that students pursuing any career pathway should exhibit to be successful. As core

standards for all career pathways in all program concentrations, these skills link career, technical and agricultural education to the state's academic performance standards.

The CTAE Foundation Skills are aligned to the foundation of the U.S. Department of Education's 16 Career Clusters. Endorsed by the National Career Technical Education Foundation (NCTEF) and the National Association of State Directors of Career Technical Education Consortium (NASDCTEc), the foundation skills were developed from an analysis of all pathways in the sixteen occupational areas. These standards were identified and validated by a national advisory group of employers, secondary and postsecondary educators, labor associations, and other stakeholders. The Knowledge and Skills provide learners a broad foundation for managing lifelong learning and career transitions in a rapidly changing economy.

CTAE-FS-1 Technical Skills: Learners achieve technical content skills necessary to pursue the full range of careers for all pathways in the program concentration.

CTAE-FS-2 Academic Foundations: Learners achieve state academic standards at or above grade level.

CTAE-FS-3 Communications: Learners use various communication skills in expressing and interpreting information.

CTAE-FS-4 Problem Solving and Critical Thinking: Learners define and solve problems, and use problem-solving and improvement methods and tools.

CTAE-FS-5 Information Technology Applications: Learners use multiple information technology devices to access, organize, process, transmit, and communicate information.

CTAE-FS-6 Systems: Learners understand a variety of organizational structures and functions.

CTAE-FS-7 Safety, Health and Environment: Learners employ safety, health and environmental management systems in corporations and comprehend their importance to organizational performance and regulatory compliance.

CTAE-FS-8 Leadership and Teamwork: Learners apply leadership and teamwork skills in collaborating with others to accomplish organizational goals and objectives.

CTAE-FS-9 Ethics and Legal Responsibilities: Learners commit to work ethics, behavior, and legal responsibilities in the workplace.

CTAE-FS-10 Career Development: Learners plan and manage academic-career plans and employment relations.

CTAE-FS-11 Entrepreneurship: Learners demonstrate understanding of concepts, processes, and behaviors associated with successful entrepreneurial performance.