Healthcare Science

PROGRAM CONCENTRATION: Healthcare Science
COURSE TITLE: Middle School Healthcare Science, 8th Grade

This course provides students with an 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 also introduces students to the concepts of teamwork and leadership in healthcare. Health Occupations Students of America activities will be used to reinforce leadership training and specific career/technical skills. Students will be introduced to the five career pathways developed by NCHSTE (the National Consortium on Health Science and Technology Education): therapeutic services, diagnostic services, health informatics, support services, and biotechnology research and development. This course is considered broad-based with high impact. Students will demonstrate mastery via completion of tasks on a performance checklist, role playing of scenarios involving patient-healthcare worker interactions, oral presentations, extemporaneous speaking, or responding to questions based on a medical reading passage.

SAFETY PRACTICES AND INFECTION CONTROL:

MSHS8-HS-1: Students will demonstrate the proper implementation of safe work practices to prevent injury or illness.

a) Compare and contrast hand washing with a surgical scrub.
b) Demonstrate the proper method for donning sterile gloves.
c) Demonstrate the proper method for transferring patients to and from a wheelchair and room chair.
d) Interpret the information on a Material Safety Data Sheet.

ACADEMIC STANDARDS:

S8CS2 – Students will use standard safety practices for all classroom laboratory and field investigations.

S8CS4 – Students will use tools and instruments for observing, measuring, and manipulating equipment and materials in scientific activities utilizing safe laboratory procedures.

S8CS6 – Students will communicate scientific ideas and activities clearly.

S8P1 – Students will examine the scientific view of the nature of matter.

M8D2 – Students will determine the number of outcomes related to a given event.

M8P3 – Students will communicate mathematically.

M8P4 – Students will make connections among mathematical ideas and to other disciplines.

NATIONAL STANDARDS:

3.14 – Choose and apply appropriate transfer methods.

3.21 – Apply principles of body mechanics and ergonomics.

7.11 – Apply infection control procedures including standard precautions

7.21 – Apply personal safety procedures based on Occupational Safety and Health Administration (OSHA) and Center for Disease Control (CDC) regulations.

7.22 – Apply proper use of personal protective equipment (PPE).

7.41 – Recognize Materials Safety Data Sheets (MSDS).

7.42 – Comply with safety signs, symbols, and labels.

7.43 – Understand implications of hazardous materials.

HEALTHCARE COMMUNICATIONS:

MSHS8-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 (Joint Commission on Accreditation of Healthcare Organizations) recommended abbreviations list.
c) Analyze and define medical terms utilizing common medical prefixes, suffixes, and word roots.

ACADEMIC STANDARDS:

S8CS1 – 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.

S8CS6 – Students will communicate scientific ideas and activities clearly.

M8D1 – Students will apply basic concepts of set theory.

M8P3 – Students will communicate mathematically.

M8P4 – Students will make connections among mathematical ideas and to other disciplines.

NATIONAL STANDARDS:

2 – Healthcare professionals will know the various methods of giving and obtaining information. They will communicate effectively, both orally and in writing.

2.11 – Identify styles and types of verbal and nonverbal communication.

2.19 – Use medical terminology to communicate information including data and observations.

TEAMWORK AND LEADERSHIP:

MSHS8-HS-3: The student will describe the attributes of effective teamwork and leadership.

a) Describe Career and Technical Student Organizations and their importance in leadership development, and identify benefits of belonging to the state supported CTSO related to healthcare science.
b) Analyze different types of teams, identify team members, and discuss their roles and responsibilities.
c) Participate in effective teamwork activities.

ACADEMIC STANDARDS:

S8CS1 – 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.

S8CS4 – Students will use tools and instruments for observing, measuring, and manipulating equipment and materials in scientific activities utilizing safe laboratory procedures.

NATIONAL STANDARDS:

8.11 – Understand interdisciplinary roles of team members.

8.12 – Recognize characteristics of effective teams.

8.13 – Classify responsibilities of various team members.

8.21 – Recognize methods for building positive team relationships.

8.22 – Respect and value the expertise and contributions of all team members.

INTRODUCTION TO NURSING:

MSHS8-HS-4: Students will assess the career pathways available in the nursing field.

a) Compare and contrast the roles and responsibilities of registered nurses, licensed practical nurses, and nursing assistants, along with their education and training requirements, salary ranges, job outlooks, and facilities in which they work.
b) Describe the personal characteristics, attitudes, and rules of appearance that apply to individuals in nursing careers.
c) Describe how social, religious, ethnic, and cultural beliefs impact patient care.
d) Identify moral and ethical issues impacting nursing care.
e) Evaluate the roles of advanced practice nurses (e.g., nurse practitioners, nurse anesthetists).
f) Perform vision screening and colorblindness screening.
g) Sample tasks: Demonstrate at least one of the following:
    - Measuring and recording of height and weight.
    - Measuring and recording of TPR (temperature, pulse, and respiration).
    - Measuring and recording of blood pressure.
    - Graphing of vital signs.
    - Formulation of a discharge plan.
    - Measuring oral fluid intake.
    - Provision of patient education.

ACADEMIC STANDARDS:

S8CS4 – Students will use tools and instruments for observing, measuring, and manipulating equipment and materials in scientific activities utilizing safe laboratory procedures.

S8CS5 – Students will use the ideas of a system, model, change, and scale in exploring scientific and technological matters.

S8CS6 – Students will communicate scientific ideas and activities clearly.

M8P1 – Students will solve problems (using appropriate technology).

M8P3 – Students will communicate mathematically.

M8P5 – Students will represent mathematics in multiple ways.

NATIONAL STANDARDS:

1.33 – Apply mathematical principles involving temperature, weights, and measures used in the healthcare delivery system.

1.35 – Analyze diagrams, charts, graphs, and tables to interpret healthcare results.

4.11 – Classify the personal traits or attitudes desirable in a member of the healthcare team.

4.12 – Summarize basic professional standards of the healthcare workers as they apply to hygiene, dress, language, confidentiality and behavior (i.e. courtesy and self-introductions).

4.22 – Exemplify professional characteristics.

4.31 – Compare potential health science career pathways using a variety of health careers within the diagnostic services, therapeutic services, health informatics services, support services, or biotechnology research and development.

4.32 – Recognize levels of education, credentialing requirements, employment opportunities, workplace environments, and career growth potential for a service area.

4.43 – Demonstrate respectful and empathetic interactions with diverse age, cultural, economic, ethnic, and religious groups in various settings.

5.15 – Apply procedures for accurate documentation and record keeping.

6.14 – Recognize ethical issues and their implications related to healthcare.

6.21 – Apply ethical behaviors including honesty and integrity in a healthcare setting.

6.31 – Understand religious and cultural values as they impact healthcare services.

9.12 – Describe strategies for the prevention of diseases including health screenings and examinations.

10.11 – Apply procedures for measuring and recording vital signs including the normal ranges.

INTRODUCTION TO MEDICINE:

MSHS8-HS-5: Students will evaluate careers available in the field of medicine.

a) Compare and contrast the roles and responsibilities of physicians, physician's assistants, and medical assistants, along with their education, training requirements, salary ranges, job outlooks, and facilities in which they work.
b) Describe various medical specialties.
c) Sample tasks – Demonstrate at least one of the following:
    - Obtaining a history.
    - Listing the steps involved in performing a physical exam.
    - Performing a 5-minute neurological exam.
    - Use of a stethoscope to evaluate lung sounds.
    - Removal of sutures.

ACADEMIC STANDARDS:

M8P5 – Students will represent mathematics in multiple ways.

S8CS4 – Students will use tools and instruments for observing, measuring, and manipulating equipment and materials in scientific activities.

S8CS6 – Students will communicate scientific ideas and activities clearly.

S8L2 – Students will describe the structure and function of cells, tissues, organs, and organ systems.

NATIONAL STANDARDS:

2.15 – Report relevant information in order of occurrence.

2.18 – Report subjective and objective information.

2.19 – Use medical terminology to communicate information including data and observations.

2.21 – Recognize the elements of oral communication using a sender-receiver process.

2.22 – Apply speaking and active listening skills using reflection, restatement, and clarification techniques.

3.11 – Select appropriate tools for information to be collected.

4.22 – Use equipment and instruments according to the manufacturer's guidelines and accepted safety practice.

4.31 – Compare potential health science career pathways using a variety of health careers within the diagnostic services, therapeutic services, health informatics services, support services, or biotechnology research and development.

4.32 – Recognize levels of education, credentialing requirements, employment opportunities, workplace environments, and career growth potential for a service area.

5.12 – Analyze and report patient and other client response.

6.12 – Analyze information gathered.

INTRODUCTION TO HEALTH INFORMATICS:

MSHS8-HS-6: Students will differentiate careers available in the field of health informatics/healthcare information systems.

a) Compare and contrast the roles and responsibilities of healthcare administrators, medical illustrators, health information technologists, medical coders, and health unit coordinators, along with their education, training requirements, salary ranges, job outlooks, and facilities in which they work.
b) Identify what information may be kept in a patient's medical record.
c) Recognize how technology may be used to improve the delivery of patient care and patient charting.
d) Define the term HIPAA and recognize the importance of patient privacy.
e) Sample tasks – Demonstrate at least one of the following:
    - Proper phone etiquette and recording of a phone message during simulated phone calls.
    - Proper filing of patient charts (e.g., alphabetically, by patient number).
    - Assigning of diagnostic and procedure codes after reviewing patients' charts.
    - Calculation of the percent increase or decrease, from year to year, of a disease or condition in a population when given appropriate sets of data.
    - Creation of a medical illustration.
    - Creation of an educational presentation about a healthcare issue or a body system.

ACADEMIC STANDARDS:

M8P4 – Students will make connections among mathematical ideas and to other disciplines.

S8CS4 – Students will use tools and instruments for observing, measuring, and manipulating equipment and materials in scientific activities.

NATIONAL STANDARDS:

1.31 – Apply mathematical computations related to healthcare procedures.

1.35 – Analyze diagrams, charts, graphs, and tables to interpret healthcare results.

4.31 – Compare potential health science career pathways using a variety of health careers within the diagnostic services, therapeutic services, health informatics services, support services, or biotechnology research and development.

4.32 – Recognize levels of education, credentialing requirements, employment opportunities, workplace environments, and career growth potential for a service area.

5.15 – Apply procedures for accurate documentation and record keeping.

5.21 – Implement mandated standards for Health Insurance Portability and Accountability Act (HIPAA).

5.22 – Recognize common threats to confidentiality.

11.11 – Identify records and files common to the healthcare setting.

11.12 – Execute data management using electronic healthcare records.

11.13 – Interpret information from electronic medical documents.

11.14 – Understand the content and diverse uses of health information.

11.21 – Implement communications using technology (i.e. Fax, E-mail, and Internet) to access and distribute data and other information.

11.22 – Execute the use of software, hardware, and the Internet.

11.23 – Recognize computer applications currently being used in today's healthcare setting.

HEALTHCARE PATHWAYS:

MSHS7-HS-8: Students will explore the five healthcare career clusters/pathways developed by NCHSTE (the National Consortium on Health Science and Technology Education).

a) Define diagnostic services, therapeutic services, support services, health informatics, and biotechnology research and development.
b) Define the term professional organization and list the reasons a healthcare worker might join one.
c) Create a presentation outlining a student-chosen healthcare career, the NCHSTE career cluster to which it belongs, the education and training required for the career, the salary range and job outlook for the career, facilities in which individuals choosing that career might work, professional organizations to which individuals

choosing that career might belong, and how a worker in the chosen career would interact with at least two other members of the healthcare team.

ACADEMIC STANDARDS:

S7CS6 – Students will communicate scientific ideas and activities clearly.

NATIONAL STANDARDS:

3 – Healthcare professionals will understand how their role fits into their department, their organization and the overall healthcare environment. They will identify how key systems affect services they perform and quality of care.

3.13 – Summarize the interdependence of healthcare professions within a given healthcare delivery system.

3.14 – Interpret the various roles of healthcare providers and clients within the healthcare system.

4.31 – Compare potential health science career pathways using a variety of health careers within the diagnostic services, therapeutic services, health informatics services, support services, or biotechnology research and development.

4.32 – Recognize levels of education, credentialing requirements, employment opportunities, workplace environments, and career growth potential for a service area.

8 – Healthcare professionals will understand the roles and responsibilities of individual members as part of the healthcare team, including their ability to promote the delivery of quality healthcare. They will interact effectively and sensitively with all members of the healthcare team.

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.