NCHSE
NATIONAL HEALTH SCIENCE | STANDARDS

EXAM INFORMATION

Exam Name

National Health Science Certificate (NHSC)

Questions

108

Points

116

Additional NCHSE Certificates

- Foundations of Healthcare Professions
- Essentials of Healthcare Practices
- Human Structure, Function, and Disease (A)
- Human Structure, Function, and Disease (B)

National Consortium for Health Science Education

As the standard setting body, NCHSE maintains and regularly revises the National Health Science Standards.

Revision History

August 2022
May 2019
August 2015
May 2012

DESCRIPTION

The National Health Science Standards provide a clear and consistent understanding of industry and postsecondary expectations for health science teachers and students. These content standards are broad and frame the essential knowledge common across all health professions. Utilizing input from business and industry experts, these standards are designed to prepare students to be college and career ready.

These standards provide the foundation for health science curriculum design, instruction, and assessment, but they are not limited to the content listed in each of the eleven National Health Science Standards.

CERTIFICATES

NCHSE health science certificates measure and document student knowledge of the National Health Science Standards, inform classroom instruction, measure program quality, and prepare students for postsecondary education and careers.

EXAM BLUEPRINT

Standard *(Single / Post Exams)*	Items per Standard	Points per Standard	Percentage of Exam
1 - Academic Foundations	24	29	**22%**
2 - Communications	11	11	**10%**
3 - Systems	5	5	**5%**
4 - Employability Skills	13	15	**12%**
5 - Legal Responsibilities	12	12	**11%**
6 - Ethics	4	4	**4%**
7 - Safety Practices	17	18	**16%**
8 - Teamwork	6	6	**6%**
9 - Health Maintenance Practices	6	6	**6%**
10 - Technical Skills	5	5	**5%**
11 - Information Technology in Healthcare	5	5	**5%**
TOTALS	**108**	**116**	**100%**

Through partnerships with state education agency leaders responsible for middle school, secondary, and postsecondary career technical education (CTE) health science programs, publishers and resource providers, professional associations, certification providers and the Health Science Educators Association (HSEA), the National Consortium for Health Science Education (NCHSE) is positioned as the national authority for health science education.

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Foundation Standard 1: Academic Foundation

Understand human anatomy, physiology, common diseases and disorders, and medical math principles.

1.1   Human Anatomy and Physiology
    1.1.1   Describe the organization of the human body and directional terms.
        a.   Identify levels of organization
- Cellular
- Chemical
- Organ
- Organism
- System
- Tissue

        b.   Demonstrate anatomical position
        c.   Identify body planes
- Coronal / Frontal
- Midsagittal
- Sagittal
- Transverse / Horizontal

        d.   Use directional terms
- Anterior / Posterior
- Cephalic/Caudal
- Medial / Lateral
- Proximal / Distal
- Superficial / Deep
- Superior / Inferior
- Ventral / Dorsal

        e.   Identify body cavities
- Abdominal
- Cranial
- Dorsal
- Nasal
- Oral
- Orbital
- Pelvic
- Spinal
- Thoracic

        f.   Identify the components of the abdominal quadrants
- Left upper
- Left lower
- Right upper
- Right lower

    1.1.2   Identify basic structures and describe functions of human body systems.
        a.   Skeletal
- Structures of the skeletal system
  - Distinguish between axial and appendicular skeletons
  - Describe long bone anatomy
  - Identify joint types and movement
  - Name and classify all bones (206)

- Functions of the skeletal system
  - Hematopoiesis
  - Mineral storage
  - Muscle attachment and movement
  - Ossification
  - Structure and support
b. Muscular
- Structures of the muscular system
  - Identify types of muscle tissue
  - Identify major muscle groups of neck, shoulder, chest, abdomen, back, arms, and legs
- Functions of the muscular system
  - Body movement
  - Posture
  - Protection
c. Integumentary
- Structures of the integumentary system
  - Identify integumentary components
  - Label the layers of skin
- Functions of the integumentary system
  - Infection protection
  - Sensory organ
  - Temperature regulation
  - UV light protection
  - Vitamin D production
d. Cardiovascular
- Structures of the cardiovascular system
  - Distinguish blood components
  - Identify cardiovascular organs
  - Label the parts of the heart
- Functions of the cardiovascular system
  - Blood flow through the heart and body
  - Cardiac conduction system
  - Transports nutrients, waste, antibodies, hormones, and gases
e. Lymphatic / Immune
- Structures of the lymphatic system
  - Identify lymphatic organs
- Functions of the lymphatic system
  - Movement of lymph fluid
  - Provide protection against disease
f. Respiratory
- Structures of the respiratory system
  - Identify respiratory organs
- Functions of the respiratory system
  - Gas exchange
g. Nervous
- Structures of the nervous system
  - Differentiate CNS and PNS
  - Differentiate sympathetic and parasympathetic
  - Identify organs of the nervous system
  - Identify structures of the special sense organs

- Functions of the nervous system
  - Movement
  - Processing
  - Sensation
h. Endocrine
  - Structures of the endocrine system
    - Identify endocrine glands
  - Functions of the endocrine system
    - Controls metabolism
    - Production of hormones
    - Regulation of body processes
    - Regulates growth, development, and maturation
i. Digestive
  - Structures of the digestive system
    - Differentiate between alimentary and accessory organs
    - Identify digestive organs in sequence
  - Functions of the digestive system
    - Absorption of nutrients
    - Chemical and mechanical digestion
    - Excretion of waste
j. Urinary
  - Structures of the urinary system
    - Identify gross and microscopic anatomy of the kidney
    - Identify urinary organs
  - Functions of the urinary system
    - Homeostatic balance
    - Process of urine formation
    - Urine composition
k. Reproductive
  - Structures of the reproductive system
    - Identify female reproductive organs
    - Identify male reproductive organs
  - Functions of the reproductive system
    - Formation of gametes
    - Production of hormones

1.2   Diseases and Disorders
1.2.1   Describe etiology, pathology, diagnosis, treatment, and prevention of common diseases and disorders, including, but not limited to the following:
- Anxiety
- Arthritis
- Asthma
- Bipolar disorder
- Cancer
- Cataracts
- Concussion / Traumatic Brain Injury (TBI)
- Cystic fibrosis
- Dementia
- Depression
- Diabetes
- Gastric ulcer

- Hepatitis
- Hypertension
- Melanoma
- Muscular dystrophy
- Myocardial infarction
- Sexually Transmitted Infection (STI)
- Stroke / Cerebrovascular Accident (CVA)
- Tuberculosis
- Urinary Tract Infection (UTI)

1.2.2 Describe biomedical therapies as they relate to the prevention, pathology, and treatment of disease.
- Gene editing
- Gene testing
- Gene therapy
- Immunizations
- Immunotherapy
- Stem cell research

1.3 Medical Mathematics

1.3.1 Demonstrate competency using basic math skills and mathematical conversions as they relate to healthcare.
a. Metric system
- Centi-
- Deci-
- Kilo-
- Milli-
- Micro-
b. Mathematical
- Addition / Subtraction
- Average
- Fractions
- Multiplication / Division
- Percentages
- Ratios
c. Conversions
- Height (inches/meters)
- Household measurements (tbsp/tsp/cup/oz)
- Length (inches/meters)
- Temperature (F/C)
- Volume (ml/cc)
- Weight/mass (pounds/grams)

1.3.2 Demonstrate the ability to analyze diagrams, charts, graphs, and tables to interpret healthcare results.

1.3.3 Demonstrate use of the 24-hour clock/military time.

Foundation Standard 2: Communications

Demonstrate methods of delivering and obtaining information, while communicating effectively.

2.1 Concepts of Effective Communication

2.1.1 Model verbal and nonverbal therapeutic communication.
- Active listening
- Reflecting

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- Silence
- Summarizing

    2.1.2   Identify common barriers to communication.
        a. Physical disabilities
- Aphasia
- Developmental level
- Hearing loss
- Impaired vision

        b. Psychological barriers
- Attitudes
- Bias
- Prejudice
- Stereotyping

        c. Language barriers

    2.1.3   Distinguish between subjective and objective information.
    2.1.4   Interpret elements of the communication process using sender-message-receiver feedback model.
    2.1.5   Modify communication to meet the needs of the patient/client and to be appropriate to the situation.
    2.1.6   Describe appropriate interactions with patients throughout various stages of psychosocial development.

2.2   Medical Terminology
    2.2.1   Use common roots, prefixes, and suffixes to communicate information.
    2.2.2   Interpret common medical abbreviations to communicate information.

2.3   Written Communication Skills
    2.3.1   Use proper elements of written and electronic communication (spelling, grammar, and formatting).
    2.3.2   Prepare examples of technical and informative writing.
    2.3.3   Demonstrate appropriate use of digital communication in a work environment, such as email, text, and social media.

Foundation Standard 3: Systems
Identify how key systems affect services performed and quality of care.

3.1   Healthcare Delivery Systems
    3.1.1   Differentiate healthcare delivery systems and healthcare related agencies.
        a. Types of practice settings
- Acute care
- Ambulatory care
- Behavioral and mental health services
- Home care
- Long-term care
- Medical and dental practices

        b. Specialty medical and dental practices
- Cosmetic surgery
- Orthodontics
- Pulmonology
- Surgical

        c. Government agencies
- Centers for Disease Control and Prevention (CDC)
- Centers for Medicare & Medicaid Services (CMS)
- National Institutes of Health (NIH)
- Occupational Safety and Health Administration (OSHA)

- U.S. Department of Veterans Affairs (VA)
- U.S. Food and Drug Administration (FDA)
- U.S. Public Health Service (USPHS)
   d. Related organizations
- American Cancer Society (ACS)
- American Heart Association (AHA)
- American Red Cross (ARC)
- March of Dimes
- World Health Organization (WHO)

3.1.2 Examine the healthcare consumer's rights and responsibilities within the healthcare system.
- Compliance
- Patient's Bill of Rights
- Self-advocacy

3.1.3 Analyze the impact of emerging issues on healthcare delivery systems.
- Behavior/Mental Health
- Bioethics
- Epidemiology
- Socioeconomics
- Technology

3.1.4 Analyze healthcare economics and related terms.
   a. The history and role of health insurance and employer/employee benefits.
   b. Fundamental terms related to health insurance
- Claim
- Coinsurance
- Co-payment
- Explanation of Benefits (EOB)
- Fraud
- Health Insurance Portability and Accountability Act (HIPAA)
- Medical Coding
- Premium

   c. Types of insurance plans
- Private health insurance plans
- Managed care
  - Health Maintenance Organization (HMO)
  - Independent Practice Association (IPA)
  - Preferred Provider Organization (PPO)
- Government programs
  - Affordable Care Act (ACA)
  - Medicaid
  - Medicare
  - Tricare
  - Workers' Compensation

Foundation Standard 4: Employability Skills
Use employability skills to enhance employment opportunities and job satisfaction.

4.1 Personal Traits of the Health Professional

4.1.1 Identify personal traits and attitudes desirable in a career ready member of a health team.
- Acceptance of criticism
- Competence

- Dependability
- Discretion
- Empathy
- Enthusiasm
- Honesty
- Initiative
- Integrity
- Patience
- Positive attitude
- Responsibility
- Self-motivation
- Social and cultural competence
- Tact
- Team player
- Willingness to learn

4.1.2 Summarize professional standards as they apply to hygiene, dress, language, confidentiality, and behavior.

4.2 Employability Skills

4.2.1 Apply employability/soft skills in healthcare.
- Chain of command
- Communication skills
- Customer service
- Decision making
- Emotional intelligence
- Flexible
- Organization
- Problem solving
- Scope of practice
- Time management
- Work ethic

4.3 Career Decision-making

4.3.1 Research levels of education, credentialing requirements, and employment trends in health professions.

4.3.2 Distinguish differences among careers within a health science pathway.
- Biotechnology research and development
- Diagnostic services
- Health informatics
- Support services
- Therapeutic services

4.4 Employability Preparation

4.4.1 Develop components of a personal portfolio.
- Community service / Service learning
- Credentials
- Leadership examples
- Mock interview
- Oral report
- Personal statement
- Professional/student organization memberships

- Resume
- Sample projects
- Technology skills
- Work-based learning documentation
- Writing sample

    4.4.2   Identify strategies for pursuing employment.
- Employer websites
- Internships
- Personal networking
- Social media

Foundation Standard 5: Legal Responsibilities

Describe legal responsibilities, limitations, and implications on healthcare worker actions.

5.1   Legal Responsibilities and Implications

    5.1.1   Analyze legal responsibilities and implications of criminal and civil law.
- Abuse
- Assault
- Battery
- Harassment
- Invasion of privacy
- Libel
- Malpractice
- Negligence
- Slander
- Tort

5.2   Legal Practices

    5.2.1   Apply standards for the safety, privacy, and confidentiality of health information.
- HIPAA
- Privileged communication

    5.2.2   Describe advance directives.
    5.2.3   Summarize the essential characteristics of a patient's basic rights within a healthcare setting.
    5.2.4   Differentiate informed and implied consent.
    5.2.5   Describe the concept of scope of practice.
    5.2.6   Interpret procedures for reporting activities and behaviors that affect the health, safety, and welfare of others (incident report).

Foundation Standard 6: Ethics

Understand accepted ethical practices with respect to cultural, social, and ethnic differences within the healthcare environment.

6.1   Ethical Practice

    6.1.1   Differentiate between ethical and legal issues impacting healthcare.
    6.1.2   Identify ethical issues and their implications related to healthcare.
- Ethics committee
- Euthanasia
- Gene editing
- Immunizations
- In vitro fertilization
- Organ donation/transplantation
- Scope of practice

6.2   Cultural, Social, and Ethnic Diversity
    6.2.1   Discuss religious, social, and cultural values as they impact healthcare.
- Ageism
- Ethnicity
- Gender
- Race
- Religion

    6.2.2   Demonstrate respectful and empathetic treatment of all patients/clients/families.
- Civility
- Customer service
- Patient satisfaction

Foundation Standard 7: Safety Practices

Identify existing and potential hazards to clients, co-workers, and self. Employ safe work practices and follow health and safety policies and procedures to prevent injury and illness.

7.1   Infection Control
    7.1.1   Explain principles of infection transmission.
- a. Identify classifications of pathogens
  - Bacteria
  - Fungi
  - Parasites
  - Protozoa
  - Viruses
- b. Describe characteristics of microorganisms
  - Aerobic
  - Anaerobic
  - Non-pathogenic
  - Pathogenic
- c. Recognize chain of infection
- d. Describe mode of transmission
  - Common vehicle (air, food, water)
  - Direct
  - Healthcare-associated infections (nosocomial)
  - Indirect
  - Opportunistic
  - Vectors

    7.1.2   Differentiate methods of controlling the spread and growth of pathogens.
- a. Asepsis
  - Antisepsis
  - Disinfection
  - Sanitization
  - Sterile technique
  - Sterilization
- b. Standard precautions
  - Environmental cleaning
  - Gloving
  - Handwashing
  - Personal Protective Equipment (PPE)

     c.   Isolation precautions
- Transmission-based contact

     d.   Bloodborne pathogen precautions
     e.   Vaccinations

7.2   Personal Safety

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

7.2.2   Demonstrate principles of body mechanics during patient care.
- Ambulating
- Lifting
- Positioning

7.2.3   Demonstrate and apply the use of Personal Protective Equipment (PPE).

7.3   Environmental Safety

7.3.1   Apply safety techniques in the work environment.
     a.   Ergonomics
     b.   Patient/client/employee safety measures
     c.   Safe operation of equipment

7.4   Common Safety Hazards

7.4.1   Observe all safety standards related to the occupational exposure to hazardous chemicals standard (Safety Data Sheets [SDS]).

7.4.2   Comply with safety signs, symbols, and labels.

7.5   Emergency Procedures and Protocols

7.5.1   Practice fire safety in a healthcare setting.

7.5.2   Apply principles of basic emergency response in natural disasters and other emergencies (safe location, contact emergency personnel, follow facility protocols).

Foundation Standard 8: Teamwork

Identify roles and responsibilities of individual members as part of the healthcare team.

8.1   Healthcare Teams

8.1.1   Evaluate roles and responsibilities of healthcare team members.

8.1.2   Identify characteristics of effective teams.
- Collaboration
- Defined roles
- Effective communication
- Effective leadership
- Measurable processes and outcomes
- Mutual respect
- Shared goals

8.2   Team Member Participation

8.2.1   Recognize methods for building positive team relationships.

8.2.2   Analyze attributes and attitudes of an effective leader.
     a.   Characteristics
- Focused and driven
- Interpersonal skills
- Motivates and inspires
- Organized and balanced

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   b. Types
- Autocratic
- Democratic
- Laissez faire

  c. Roles
- Communicates vision
- Leads change
- Manages accountability

8.2.3 Apply effective techniques for managing team conflict.
- Communicate assertively
- Gather the facts
- Mediate disputes
- Negotiate resolutions
- Set clear expectations

8.2.4 Evaluate why teamwork is an important part of healthcare and how it improves patient care.

Foundation Standard 9: Health Maintenance Practices

Differentiate between wellness and disease. Promote disease prevention and model healthy behaviors.

9.1 Healthy Behaviors

9.1.1 Promote self-care behaviors of health and wellness.
- Exercise
- Nutrition
- Relationships
- Sleep habits
- Stress management
- Weight control

9.1.2 Examine various aspects of behavioral health.
- Anxiety
- Depression
- Substance abuse
- Suicide

9.1.3 Describe public health strategies for prevention of disease.
- Community health education outreach programs
- Immunizations
- Medical, dental, and mental health screenings
- Routine physical exams
- Self-care behaviors

9.1.4 Investigate complementary and alternative health practices as they relate to wellness and disease prevention.
- Eastern medicine
- Holistic medicine
- Homeopathic medicine
- Manipulative medicine

9.2 Healthcare Across the Lifespan

9.2.1 Discuss physical, mental, social, and behavioral development and its impact on healthcare.

9.2.2 Identify socioeconomic determinants of health and wellness.

Foundation Standard 10: Technical Skills*

Apply and demonstrate technical skills and knowledge common to health career specialties.

10.1   Technical Skills*

10.1.1   Demonstrate procedures for measuring and recording vital signs in both normal and abnormal ranges - including but not limited to:

- Blood pressure
- Height and weight
- Oxygen saturation
- Pain
- Pulse
- Respirations
- Temperature

10.1.2   Obtain training or certification in:

- Automated external defibrillator (AED)
- Cardiopulmonary resuscitation (CPR)
- First aid
- Foreign body airway obstruction (FBAO)

*Additional technical skills may be included in a program of study based on career specialties.

Foundation Standard 11: Information Technology in Healthcare

Apply information technology practices common across health professions.

11.1   Key principles, components, and practices of health information systems (HIS)

11.1.1   Identify components of an electronic health record (EHR) and/or electronic medical record (EMR).

- Diagnostic tests
- History and physical
- Medications
- Patient demographics
- Progress notes
- Treatment plan

11.1.2   Explore different types of health data collection tools.

- Medical wearable devices
- Patient monitoring equipment
- Phone apps

11.1.3   Create electronic documentation that reflects timeliness, completeness, and accuracy.

11.1.4   Examine information systems policies, procedures, and regulations as required by national, state, and local entities.

- Facility policies
- HIPAA
- Medical coding
- Social media