



# **HEALTH SCIENCE EDUCATION STANDARDS**

**March 2017**



The Mission of the NYS Health Science Educators Association is to provide health science educators with a common ground on which to assess, develop, and implement the tools to assist future healthcare leaders into the 21st century.

This document contains the NYS Health Science Education Standards which have been adopted and aligned from the National Health Science standards. (Education, 2015) The NYS Health Science Education Standards could not have been developed without the dedication and hard work put forth by members of NYSHSEA. Special thanks to each of the following individuals for their dedication to this project and their willingness to openly share their experience and expertise. Thank you to the National Consortium for Health Science Education for their hard work and dedication to developing the National Health Science Standards © 2015 for all states to align to their curriculum to increase rigor, accountability, and development of Future Healthcare Professionals through Health Science Education.

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## Health Science Foundation Standards

The New York State Health Science Educators Association has aligned with the National Health Science Education Standards to provide a clear and consistent understanding of industry and post-secondary expectations for teachers and students. These standards are designed to provide the essential knowledge common across health professions to prepare and increase the number of students that are college and career ready. (Education, 2015)

### **Foundation Standard 1: Academic Foundation**

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

#### 1.1 Human Anatomy and Physiology

##### 1.11 Identify basic levels of organization of the human body

- a. Describe the basic structures and functions of cells, tissues, organs, and systems.
- b. Compare the relationships among cells, tissues, organs, and systems.

##### 1.12 Identify body planes, directional terms, cavities, and quadrants.

- a. Body planes: (sagittal, midsagittal, coronal/frontal, and transverse/horizontal)
- b. Directional terms: (superior, inferior, anterior/ventral, posterior/dorsal, medial, lateral, proximal, distal, superficial, and deep)
- c. Cavities: (dorsal, cranial, spinal, thoracic, abdominal, and pelvic)
- d. Quadrants: (upper right, lower right, upper left, and lower left)

##### 1.13 Analyze basic structures and functions of human body systems (Skeletal, Muscular, Integumentary, Cardiovascular, Lymphatic, Respiratory, Nervous, Special senses)

- a. Skeletal: (bone anatomy, axial and appendicular skeletal bones, functions of bones, ligaments, and types of joints)
- b. Muscular: (microscopic anatomy of muscle tissue, types of muscle, locations of skeletal muscles, functions of muscles, tendons, directional movements)
- c. Integumentary: (layers, structures and functions of skin)
- d. Cardiovascular: (components of blood, structures and functions of blood components, structures and functions of the cardiovascular system, conduction system of the heart, cardiac cycle)
- e. Lymphatic: (structures and functions of lymphatic system, movement of lymph fluid)
- f. Respiratory: (structures and functions of respiratory system, physiology of respiration)
- g. Nervous: (structures and functions of nervous tissue and system, organization of nervous system)
- h. Special senses: (structures and functions of eye, ear, nose and tongue; identify senses for sight, hearing, smell, taste, touch)

- i. Endocrine: (endocrine versus exocrine, structures and functions of endocrine system, hormones, regulation of hormones)
  - j. Digestive: (structures and functions of gastrointestinal tract, chemical and mechanical digestion, structures and functions of accessory organs)
  - k. Urinary: (structures and functions of urinary system, gross and microscopic anatomy, process of urine formation, urine composition, and homeostatic balance)
  - l. Reproductive: structures and functions of male and female reproductive systems, formation of gametes, hormone production and effects, menstrual cycle, and conception
- 1.14 Describe the human life cycle and explain the changes that occur.
- 1.2 Diseases and Disorders
- Describe common diseases and disorders of each body system, (such as: cancer, diabetes, dementia, stroke, heart disease, tuberculosis, hepatitis, COPD, kidney disease, arthritis, and ulcers)
- a. Etiology
  - b. Pathology
  - c. Diagnosis
  - d. Treatment
  - e. Prevention
- 1.22 Analyze the interdependence of the body systems as they relate to wellness, disease, disorders, therapies, and care rehabilitation.
- 1.23 Analyze methods to control the spread of pathogenic microorganisms.
- 1.24 Contrast the various types of immunities.
- 1.25 Analyze body system changes in light of diseases, disorders, and wellness.
- 1.26 Compare the aging process among the body systems.
- 1.27 Discuss research related to emerging diseases and disorders, (such as: autism, VRSA, PTSD, Listeria, seasonal flu).
- 1.28 Describe and analyze biomedical therapies as they relate to the prevention, pathology, and treatment of disease.
- a. Gene testing
  - b. Gene therapy
  - c. Human proteomics
  - d. Cloning
  - e. Stem cell research
- 1.3 Medical Mathematics

- 1.31 Demonstrate competency in basic math skills and mathematical conversions as they relate to health care
  - a. Metric system, such as: centi, milli, kilo
  - b. Mathematical: (average, ratios, fractions, percentages, addition, subtraction, multiplication, division)
  - c. Conversions: height, weight/mass, length, volume, temperature, household measurements
- 1.32 Demonstrate the ability to analyze diagrams, charts, graphs, and tables to interpret healthcare results.
- 1.33 Demonstrate use of the 24-hour clock/military time.

### **Foundation Standard 2 Communications:**

Demonstrate methods of delivering and obtaining information, while communicating effectively. Effective communication skills are essential to all healthcare professionals.

- 2.1 Concepts of Effective Communication
  - 2.11 Model verbal and nonverbal communication.
  - 2.12 Identify common barriers to communication.
    - a. Physical disabilities (aphasia, hearing loss, impaired vision)
    - b. Psychological barriers (attitudes, bias, prejudice, stereotyping)
  - 2.13 Identify the differences between subjective and objective information.
  - 2.14 Interpret elements of communication using basic sender-receiver-message-feedback Model
  - 2.15 Practice speaking and active listening skills.
  - 2.16 Modify communication to meet the needs of individuals and situations.
- 2.2 Medical Terminology
  - 2.21 Use common roots, prefixes, and suffixes to communicate information.
  - 2.22 Interpret medical abbreviations to communicate information.
    - a. Common abbreviations
    - b. Joint Commission official “Do Not Use List”
- 2.3 Written Communication Skills
  - 2.31 Utilize proper elements of written and electronic communication (use of proper etiquette in electronic messaging, spelling, grammar, and formatting).
  - 2.32 Prepare examples of technical, informative, and creative writing.

### **Foundation Standard 3: Health Care Systems:**

Identify how key systems affect services performed and quality of care. Future healthcare workers will be able to explain different types of health care agencies and facilities, their delivery systems and major services provided

### 3.1 Health Care Delivery Systems

#### 3.11 Compare healthcare delivery systems.

- a. Non-profit and for profit, (such as: hospitals, ambulatory facilities, long-term care facilities, home health, medical and dental offices, and mental health services)
- b. Government, (such as: CDC, FDA, WHO, OSHA, Public Health systems/Health Departments, Veteran's Administration)
- c. Non-profit Organizations, (such as: March of Dimes, American Heart Association)

#### 3.12 Describe the responsibilities of consumers within the healthcare system, (such as: self-advocacy, patient compliance, and provider and consumer obligations)

#### 3.13 Assess the impact of emerging issues on healthcare delivery systems, (such as: technology, epidemiology, bioethics, and socioeconomics)

#### 3.14 Discuss healthcare economics and common methods of payment for healthcare.

- a. Private health insurance (such as: Blue Cross, Affordable Care Act - ACA)
- b. Managed care (such as: HMOs, PPOs, medical home)
- c. Government programs (Medicare, Medicaid, New York State of Health, and Workers' Compensation)
- d. Evaluate the impact of health care outcomes on health care costs

## **Foundation Standard 4: Education and Career Preparation**

Health care professionals will understand and utilize employability skills to enhance their employment opportunities and job satisfaction. They will demonstrate key employability skills and will maintain and upgrade skills, as needed.

### 4.1 Personal Traits of the Health Professional

#### 4.11 Demonstrate process for obtaining employment. Identify strategies for pursuing employment, such as: social media, personal networking, job sites, and internships.

#### 4.12 Demonstrate and apply employability skills as they apply to hygiene, dress, language, confidentiality, behavior and work ethics

- a. Chain of command
- b. Correct grammar
- c. Decision making
- d. Flexible
- e. Initiative

- f. Integrity
  - g. Loyalty
  - h. Positive attitude
  - i. Professional characteristics
  - j. Prompt and prepared
  - k. Responsibility
  - l. Scope of practice
  - m. Teamwork
  - n. Willingness to learn
- 4.3 Develop and Expand components of a personal portfolio (letter of introduction, resume, healthcare project, writing sample, work-based learning, oral presentation, service learning, credentials, technology, and leadership experience).
- 4.4 Career Preparation Profile
- 4.41 Develop components of a personal portfolio.
- a. Letter of introduction
  - b. Resume
  - c. Sample Projects
  - d. Writing Sample
  - e. Work-based Learning Documentation
  - f. Oral Report
  - g. Service Learning/Community Service
  - h. Credentials
  - i. Technology Skills
  - j. Leadership Examples
- 4.42 Participate in health care work-based learning experiences, (such as: guest speakers, virtual tours, job shadowing, blood drives, community service projects, internships)
- 4.5 Leadership Participate in health science student leadership organizations, (such as HOSA Future Health Professionals and SkillsUSA)

## **Foundation Standard 5: Legal Responsibilities:**

Describe legal responsibilities, limitations, and implications on healthcare worker actions. Health care professionals will understand and describe the legal responsibilities, limitations, and implications of their actions within the health care delivery setting. They will perform their duties according to regulations, policies, laws, and legislated rights of clients, residents, and patients.

- 5.1 Describe and explain legal responsibilities and implications affecting health care workers.
- 5.11 Analyze and explain legal responsibilities and explain laws governing harassment, labor and scope of practice.
- 5.12 Analyze legal responsibilities and implications of actions
  - a. Malpractice
  - b. Negligence
  - c. Assault
  - d. Batter
  - e. Invasion of privacy
  - f. Abuse
  - g. Liable
  - h. Slander
- 5.2. Legal Practices
- 5.21. Apply procedures for accurate documentation and record-keeping, (such as legally correcting errors on medical records)
- 5.22. Apply standards for safety, privacy, and confidentiality of the Health Insurance Portability and Accountability Act (HIPAA privileged communication)
- 5.23 Describe advance directives, informed consent and explore the Patient's and Resident's Bill of Rights and Medical orders for life sustaining treatment (MOLST)

## **Foundation Standard 6: Ethics:**

Health care professionals will understand accepted ethical and legal practices with respect to cultural, social, and ethnic differences within the health care environment.

- 6.1 Ethical Practice
- 6.11 Differentiate between ethical and legal issues impacting healthcare.
- 6.12 Identify ethical issues and their implications related to healthcare, (such as: organ donation, in vitro fertilization, euthanasia, scope of practice, ethics committee)
- 6.13 Discuss and utilize procedures for reporting activities and behaviors that affect health, safety, and welfare of others, such as: an incident report.
- 6.2 Cultural, Social, and Ethnic Diversity



- 6.21 Demonstrate respectful and empathetic treatment of all individuals, (such as: patients/clients, customer service, patient satisfaction, civility)
- 6.22 Discuss and differentiate religious and cultural values as they impact health care, (such as: ethnicity, race, religion, gender)
- 6.23 Apply ethical behaviors in health care including personal, professional, and organizational ethics

### **Foundation Standard 7: Safety Practices:**

Healthcare professionals will understand and be able to identify the existing and potential hazards to clients, residents and patients, coworkers, and self. They will prevent injury or illness through safe work practices and follow health and safety policies and procedures.

- 7.1 Demonstrate and explain the principles of infection control related to Chain of Infection
  - 7.11 Infection and Mode of Transmission
    - a. Recognize the difference between Transmission Based Precautions and Standard Precautions.
  - 7.12 Understand and differentiate and demonstrate methods of controlling the spread and growth of microorganisms: pathogenic, non-pathogenic, aerobic, and anaerobic
    - a. Aseptic control practices: hand washing, antisepsis, disinfection, sterilization, sterile technique
    - b. Standard precautions
    - c. Isolation precautions
    - d. Blood borne pathogen precautions and (PPE) Personal Protective Equipment
- 7.2 Personal Safety
  - 7.21 Apply and define personal safety procedures based on Occupational Safety and Health Administration (OSHA) and Centers for Disease Control (CDC) regulations.
  - 7.22 Apply principles of body mechanics in all areas of healthcare activities.
- 7.3 Environmental Safety
  - 7.31 Define and discuss safety techniques in the work environment with regard to implications of hazardous materials and recognize important information on Material Safety Data Sheets
    - a. Ergonomics
    - b. Safe operation of equipment
    - c. Patient/client safety measures
- 7.4 Common Safety Hazards
  - 7.41 Observe all safety standards related to the Occupational Exposure to Hazardous Chemicals Standard (such as: Material Safety Data Sheets)

- 7.42 Comply with safety signs, symbols, and labels
- 7.5 Emergency Procedures and Protocols
- 7.51 Practice fire safety in a healthcare setting.
- 7.52 Summarize principles of basic emergency response in natural disasters or other emergencies, (such as: safe locations, emergency personnel contacts, and protocols)

### **Foundation Standard 8: Teamwork:**

Identify roles and responsibilities of individual members as part of the health care team. Teamwork is an essential concept to healthcare that all members of the healthcare team must demonstrate in order to ensure quality of care

- 8.1 Healthcare Teams
  - 8.11 Identify roles and responsibilities of team members
    - a. Examples of healthcare teams
    - b. Responsibilities of team members
    - c. Benefits of teamwork
  - 8.12 Identify characteristics of effective teams
    - a. Active participation
    - b. Commitment
    - c. Common goals
    - d. Cultural sensitivity
    - e. Flexibility
    - f. Open to feedback
    - g. Positive attitude
    - h. Reliability
    - i. Trust
    - j. Value individual contributions
- 8.2 Team Member Participation
  - 8.21 Recognize methods for building positive team relationships (such as: mentorships and teambuilding)
  - 8.22 Analyze attributes and attitudes of an effective leader
    - a. Characteristics (interpersonal skills, focused on results, positive)
    - b. Types (autocratic, democratic, laissez faire)
    - c. Roles (sets vision, leads change, manages accountability)

- 8.23 Apply effective techniques for managing team conflict (negotiation, assertive communication, gather the facts, clear expectations, mediation)

### **Foundation Standard 9: Health Maintenance Practices:**

Healthcare professionals will understand and be able to differentiate between the fundamentals of wellness and the prevention of disease processes. They will practice and promote disease prevention and model healthy behaviors

#### 9.1 Healthy Behaviors

- 9.11 Promote behaviors of health and wellness (such as: nutrition, weight control, exercise, and sleep habits)

- 9.12 Describe strategies for prevention of disease

- a. Routine physical exams and preventive screenings
  - b. Medical, dental, and mental health screenings
  - c. Community health education outreach programs to promote health and wellness, and the prevention of disease and injury
  - d. Immunizations
  - e. Stress management
  - f. Identify high risk behaviors and apply safety practices to reduce them

- 9.13 Investigate complementary and alternative health practices as they relate to wellness and disease prevention, (such as Eastern medicine, holistic medicine, homeopathy, manipulative, and natural therapies)

### **Foundation Standard 10: Technical Skills:**

Apply technical skills required for all career specialties and demonstrate skills and knowledge as appropriate.

#### 10.1 Technical Skills

- 10.11 Apply procedures for measuring and recording vital signs including the normal ranges for: temperature, pulse, respirations, blood pressure, and pain

- 10.12 Obtain training or certification in cardiopulmonary resuscitation (CPR), automated external defibrillator (AED), foreign body airway obstruction (FBAO) and first aid.

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

## **Foundation Standard 11: Information Technology Applications:**

Utilize and understand information technology applications common across health professions.

### 11.1 Key Principles of Health Information Systems

- 11.11 Identify types of data collected and security needed in Electronic Health Records/Electronic Medical Records (EHR or EMR); (such as: history and physical, medications, diagnostic tests, and patient demographics)
  - 11.12 Explore different types of health record data collection tools, such as: patient monitoring equipment, telemedicine, phone application, and medical wearable devices
  - 11.13 Identify the types and content of an EHR/EMR, such as: pharmacy, laboratory, and radiology.
  - 11.14 Create documentation in EHR/EMRs that reflect timeliness, completeness, and accuracy
  - 11.15 Adhere to information systems policies, procedures, and regulations as required by National, State, and Local entities.
  - 11.16 Identify social media technologies, electronic conferencing, web pages, and email systems to communicate information to team members and colleagues
- ### 11.2 Privacy and Confidentiality of Health Information
- 11.21 Apply fundamentals of privacy and confidentiality policies and procedures (HIPAA)
  - 11.22 Identify legal and regulatory requirements related to the use of personal health information (such as: Health Information Technology Act—HITECH Act, American Recovery and Reinvestment Act—ARRA)
  - 11.23 Identify common policies and procedures for proper access, disclosure and protection of personal health information, (such as: passwords, administrative safeguards, and database security)
  - 11.24 Describe consequences of inappropriate use of health data in terms of disciplinary action
  - 11.25 Understand the principle to correct inaccurate information/errors entered into an EHR/EMR, such as: adding, clarifying, and correcting information
  - 11.26 Identify and recognize technologies, written communications and security measures for documenting, and retrieval, storage and communication of health records
- ### 11.3 Basic Computer Skills
- 11.31 Apply basic computer concepts and terminology necessary to use computers and other mobile devices
  - 11.32 Demonstrate basic computer troubleshooting procedures, such as: restart, check power supply, refresh browser, and check settings
  - 11.33 Demonstrate use of file organization and information storage
  - 11.34 Identify uses of basic word processing, spreadsheet, and database applications
  - 11.35 Evaluate validity of web-based resources

11.36 Demonstrate appropriate usage of email and social media in a work environment, (such as: work-related communications, personal texting on own time, appropriate language and content, use full language sentences

## **Works Cited**

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## **Career Development and Occupational Studies**

### **Standard 1: Career Development**

Students will be knowledgeable about the world of work, explore career options, and relate personal skills, aptitudes, and abilities to future career decisions.

### **Standard 2: Integrated Learning**

Students will demonstrate how academic knowledge and skills are applied in the workplace and other settings.

### **Standard 3a: Universal Foundation Skills**

Students will demonstrate mastery of the foundation skills and competencies essential for success in the workplace.

### **Standard 3b: Career Majors**

Students who choose a career major will acquire the careerspecific technical knowledge/skills necessary to progress toward gainful employment, career advancement, and success in postsecondary programs.

## **NYS P-12 Common Core Learning Standards**

On January 10th, 2011, the Board of Regents approved the recommended additions to the Common Core Learning Standards for English Language Arts & Literacy and Common Core Learning Standards for Mathematics, plus a new set of Prekindergarten Standards. The documents can be accessed below. Additional information about the P-12 Common Core Learning Standards for English Language Arts & Literacy is available on the Engage NY website at <http://engageny.org/common-core-curriculum-assessments/>

